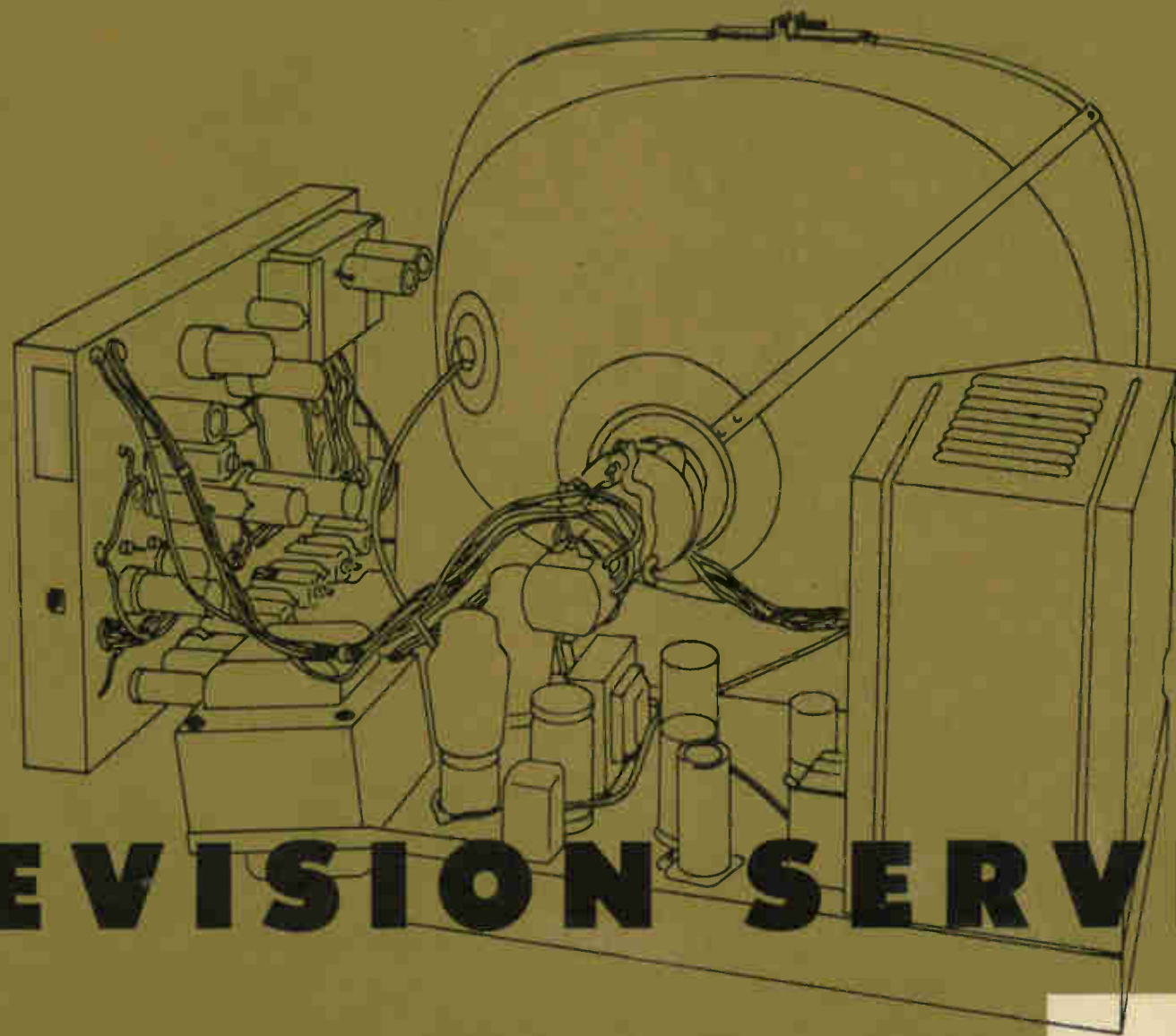


SERVICE DATA



COMPLETE

- SCHEMATICS
- ALIGNMENT
- PARTS LISTS

TELEVISION SERVICE DATA

TELEVISION

DU MONT

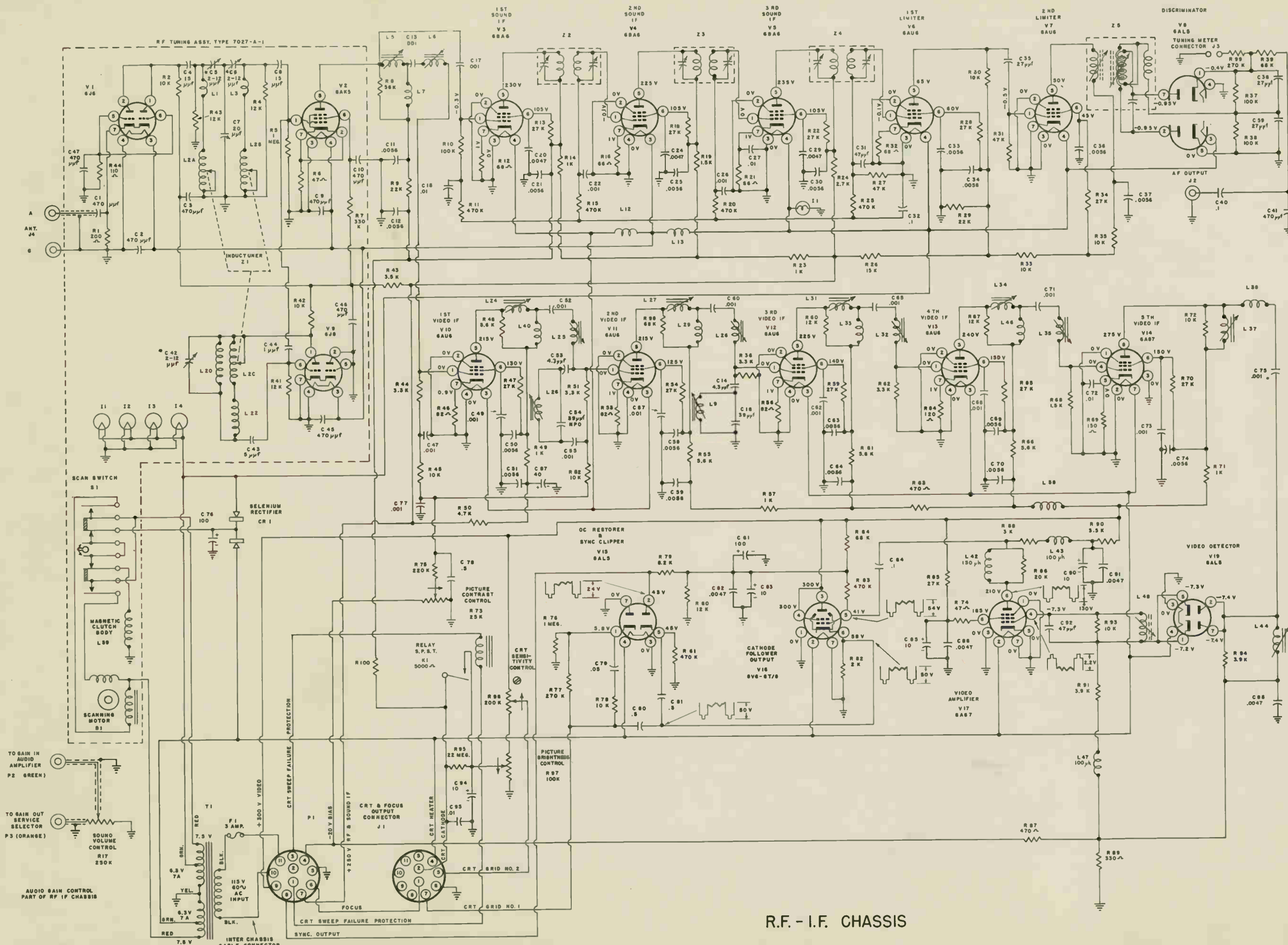
ALLEN B. DU MONT LABORATORIES, INC.

\$1.50

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R.F. - I.F. CHASSIS

NOTE: PIN CONNECTIONS ON J1 ARE SHOWN FROM BOTTOM OR WIRING SIDE OF CONNECTOR.
CONNECTIONS ON P1 ARE FROM TOP OR PLUS SIDE.

SERVICE SELECTOR ELECTRICAL PARTS LIST

- C1 3-219 Capacitor, fixed: paper; 0.5 mfd; 200 V; ±25%
- J1 9-276 Connector, female: 1 contact; shielded
- J2 Same as J1
- J3 Same as J1
- J4 Same as J1
- P1 9-366 Connector, chassis: male; 8 pin
- S1 5C-4804 Switch, push button; 5 position

RECORD CHANGER ELECTRICAL LIST.

- (DE-1978—Type 7007-A1)
- C1 3-1257 Capacitor, fixed: paper; .02 mfd; 600 V
- P1 9-340 Connector, male: 2 prong
- R1 RC21BF473K Resistor, fixed: composition; 47,000 ohm; 1/2 W; ±10%
- RC1 69-2 Record Changer, Intermix
- L2 39-5 Lamp, incandescent, 6 W; 110 V
- S2 5-222 Switch, sensitive, SPST, spring return, normally closed
- (DE-1979—Issue 3—Type 7018-A1)
- C1 3-1257 Capacitor, fixed: paper; .02 mfd; 600 V
- L2 39-5 Lamp, incandescent, 6 watt; 110 V
- P1 9-340 Connector, male: 2 prong
- R1 RC21BF473K Resistor, fixed: composition; 47,000 ohm; 1/2 W; ±10%
- RC1 69-1 Record Changer, non-Intermix
- S2 5-222 Switch, sensitive, SPST, spring return, normally closed

CATHODE-RAY TUBE AND OTHER CABINET MOUNTINGS ELECTRICAL PARTS LIST.

- (DE-1952—Type 7008-A1)
- M1 30-739 Meter, 150 ma., zero center, dwgs. no. DD4649B with scale dwg. DD4640B
- (DE-1957—Issue 2—Type 7005-A1)
- F1 11-54 Fuse, cartridge: 8 amp; 250 V
- F2 Same as F1
- L1 40-6 Lamp, glow: neon; 115 V; 1/4 watt
- L2 21-C4882-101 Focus Coil Assembly
- L2 21-354 Inductor, fixed: deflection yoke
- S1 5-51 Switch, push: SPST
- S7 Same as S1
- (DE-1958—Issue 1—Type 7012-A1)
- F1 11-54 Fuse, cartridge: 8 amp; 250 V
- F2 Same as F1
- L1 40-6 Lamp, glow: neon; 115 V; 1/4 watt
- L2 21-C4882-101 Focus Coil Assembly
- L2 21-354 Inductor, fixed: deflection yokes
- S1 5-51 Switch, push: SPST
- (DE-2014—Issue 2—Type 7017-A1)
- LS1 53-11 Speaker, Dynamic, 12"
- (DE-2013—Issue 1—Type 7006-A1)
- LS1 30-761 Loudspeaker, 15", Permanent Magnet Dynamic
- (DE-2060—Issue 1—Types 7022-A1, A2, 7023-A1)
- B1 53-60 Motor, A.C.: series; 100 pound inches
- F1 11-56 Fuse, cartridge: 1/2 amp; 250 V
- P1 9-340 Connector, male: 2 prong
- S3 5-218 Switch, sensitive: SPST, normally open
- S4 5-217 Switch, sensitive: SPST, normally closed
- S5 Same as S4
- S6 5-220 Switch, pull: SPDT; no off
- V1 25-20BP4 Tube, electron: type 20BP4; cathode-ray
- (DE-2061—Issue 1—Types 7024-A1, A2, 7025-A1, A2, and 7026-A1, A2)
- V1 25-15AP4 Tube, electron: Type 15AP4; cathode-ray

PARTS LIST

AUDIO AMPLIFIER ELECTRICAL PARTS LIST DE-1949.

Type 7001-A

Table with columns: Sym-bol No., Reference Drawing or Part No., Description. Lists parts for Type 7001-A audio amplifier.

SWEEP CHASSIS ELECTRICAL PARTS LIST DE-1950.

Type 7002-A1

Table with columns: Sym-bol No., Reference Drawing or Part No., Description. Lists parts for Type 7002-A1 sweep chassis.

Table with columns: Part No., Description. Lists parts for various components including capacitors, resistors, and transformers.

Table with columns: Part No., Description. Lists parts for various components including resistors, capacitors, and tubes.

RF ASSEMBLY ELECTRICAL PARTS LIST DE-1955.

Type 7027-A1

Table with columns: Part No., Description. Lists parts for Type 7027-A1 RF assembly.

Table with columns: Part No., Description. Lists parts for various components including coils, tubes, and resistors.

IF ASSEMBLY ELECTRICAL PARTS LIST DE-1951.

Type 7003-A1

Table with columns: Part No., Description. Lists parts for Type 7003-A1 IF assembly.

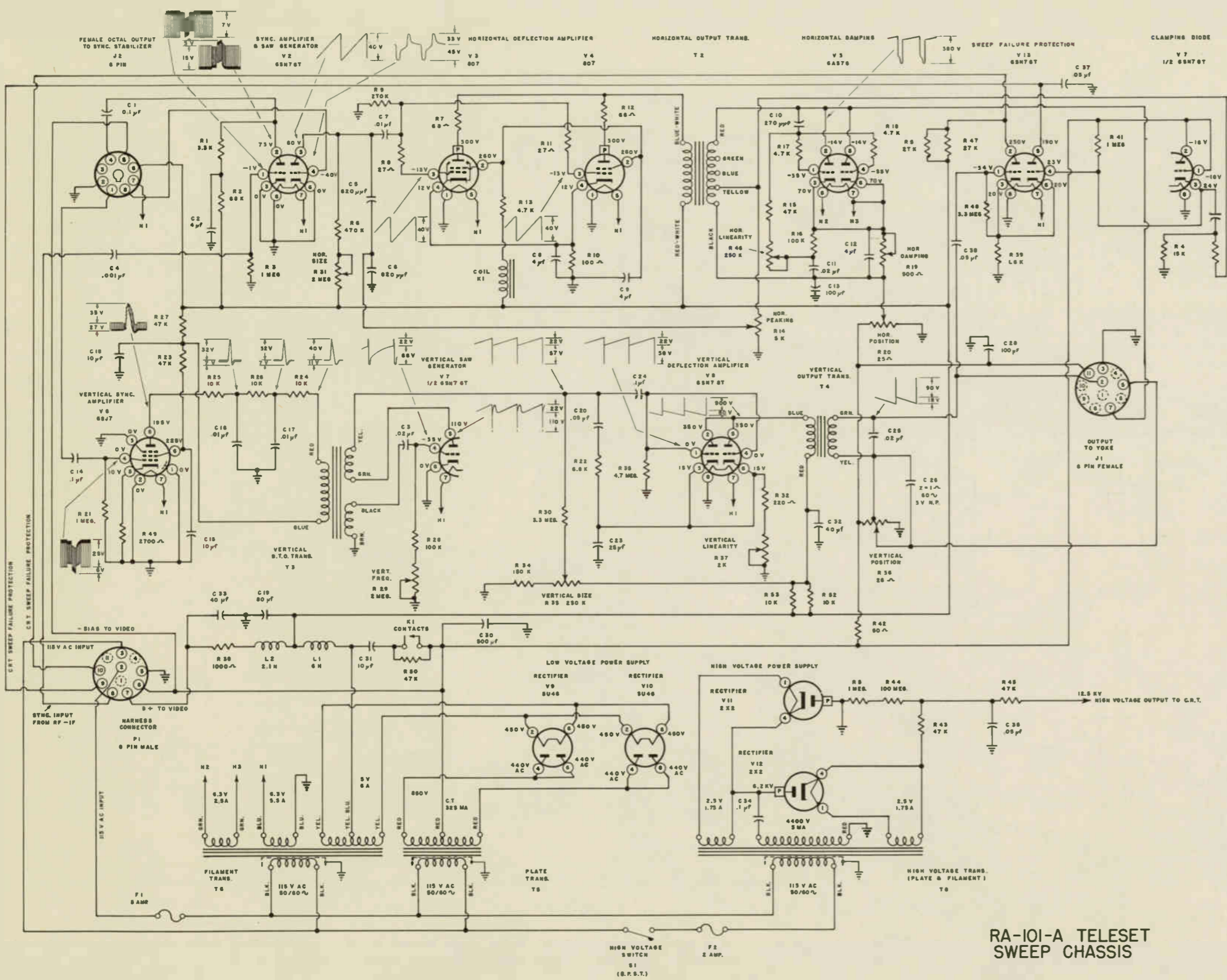
Table with columns: Part No., Description. Lists parts for various components including relays, coils, and resistors.

Table with columns: Part No., Description. Lists parts for various components including resistors, capacitors, and transformers.

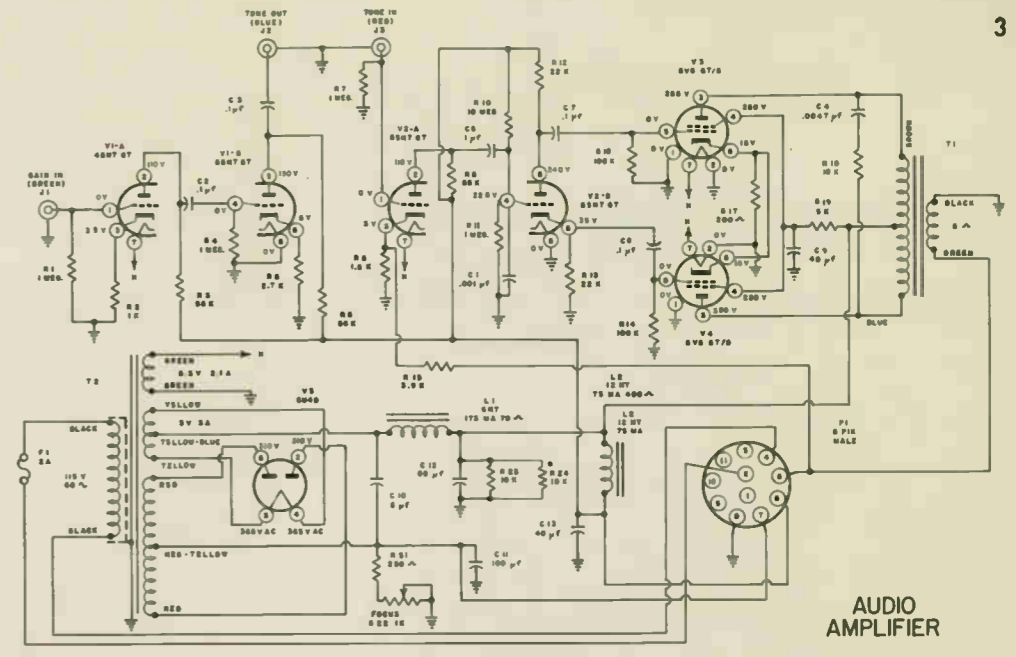
TONE SELECTOR ELECTRICAL PARTS LIST DE-1953.

Type 7009-A1

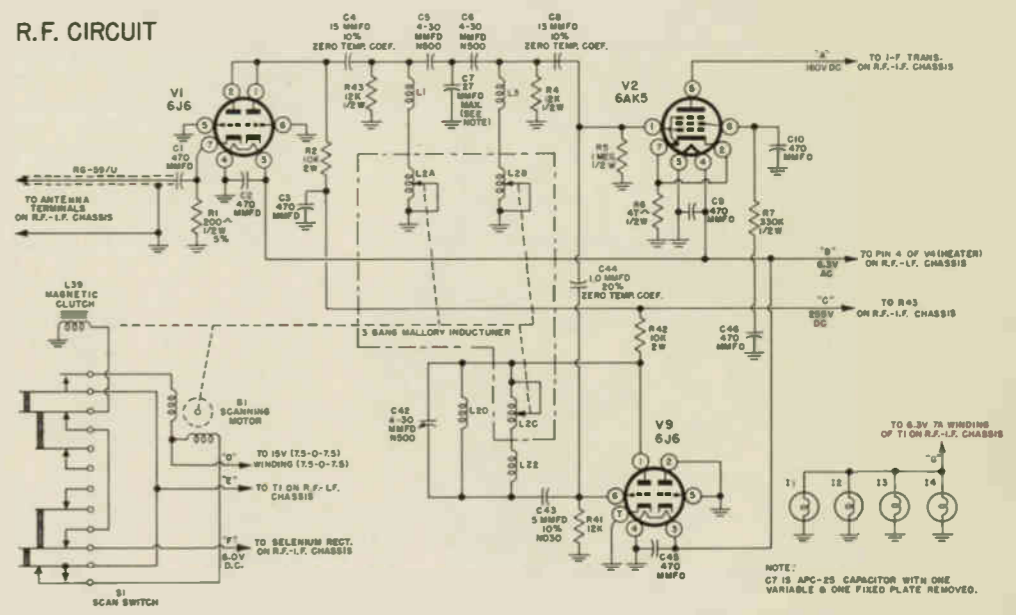
Table with columns: Part No., Description. Lists parts for Type 7009-A1 tone selector.



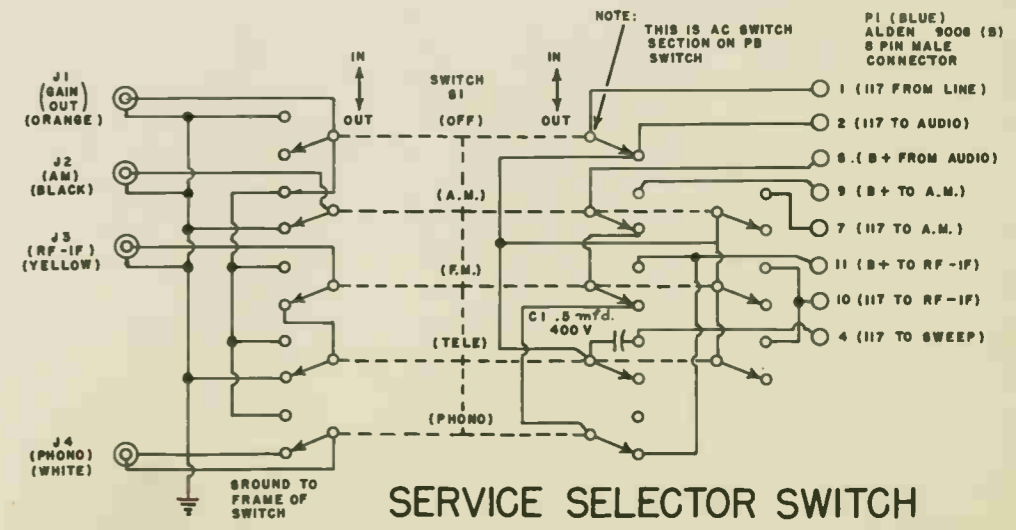
RA-101-A TELETSET SWEEP CHASSIS



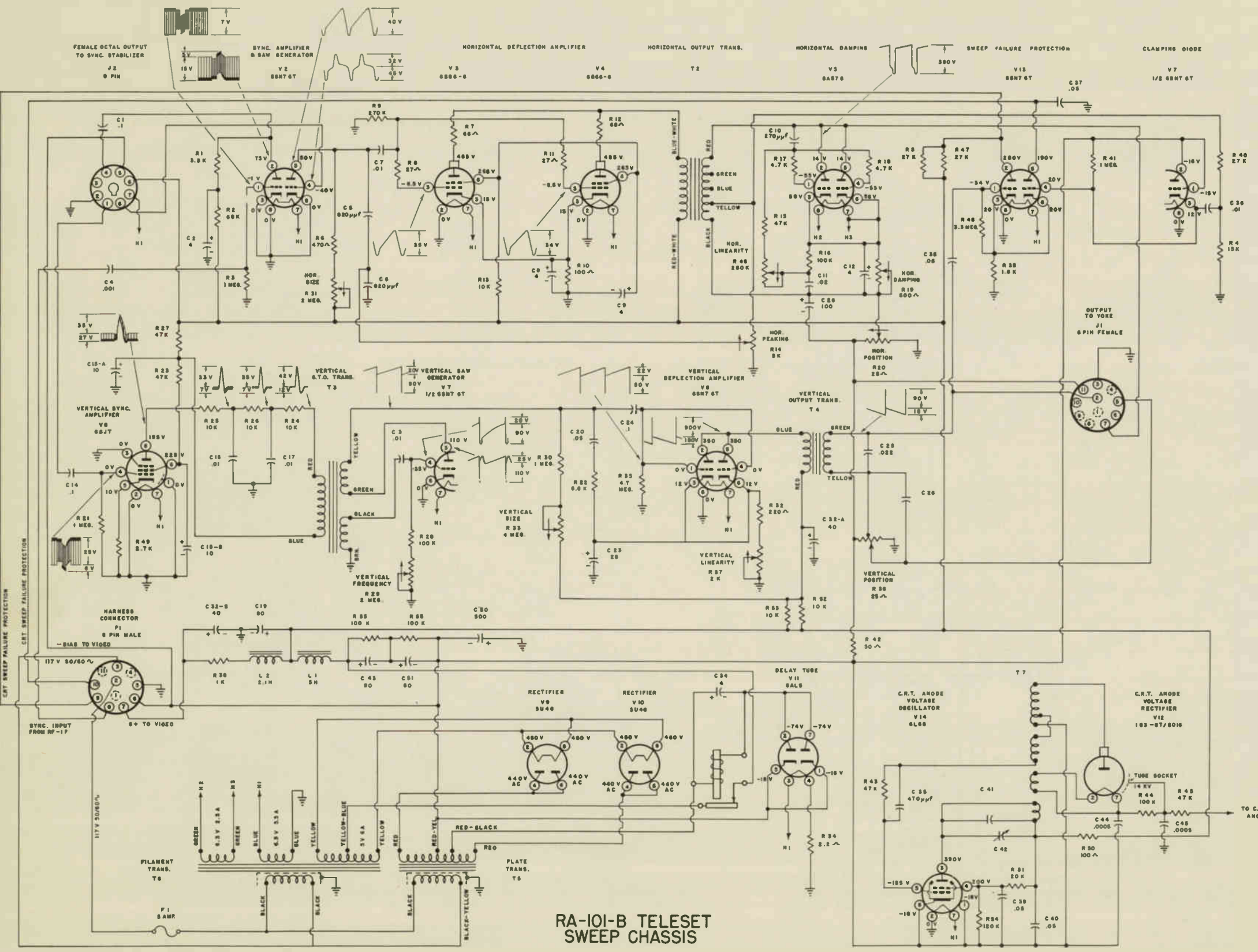
AUDIO AMPLIFIER



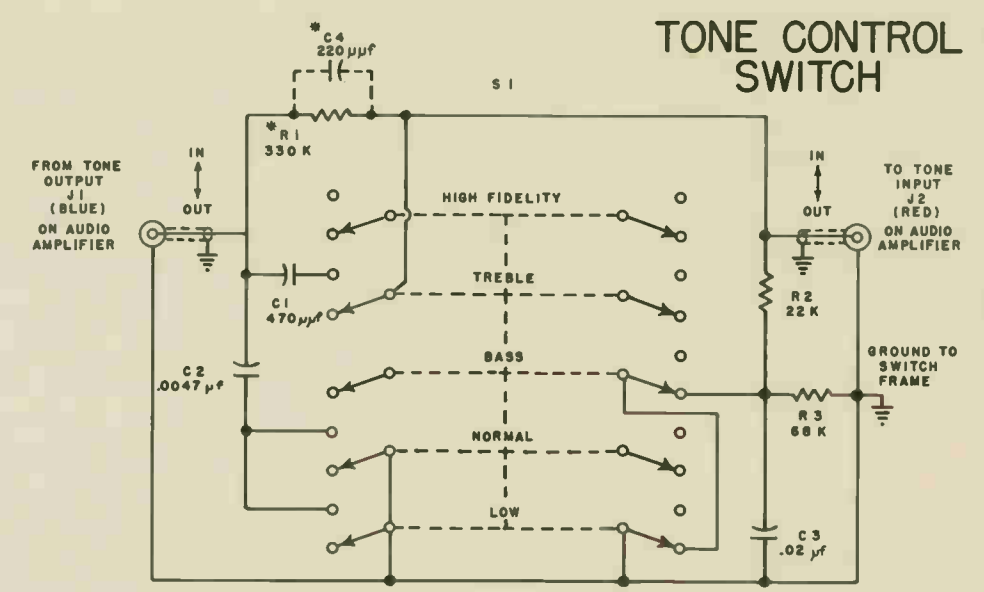
R.F. CIRCUIT



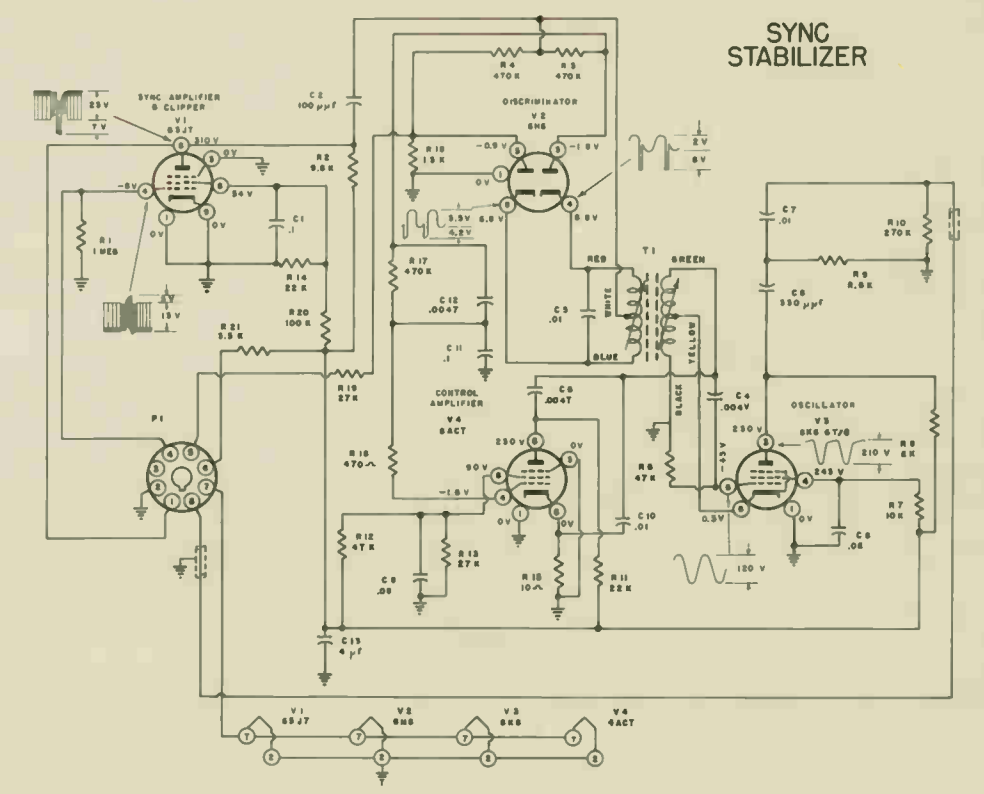
SERVICE SELECTOR SWITCH



RA-101-B TELESET SWEEP CHASSIS



TONE CONTROL SWITCH



SYNC STABILIZER

VIDEO IF ALIGNMENT RA-101

Before beginning alignment, see notes. Remove 6J6 (V1) RF amplifier, 6AK5 (V2) mixer and 6J6 (V9) oscillator tubes. Use 6AK5 (V2) mixer tube with short length of wire connected to pin 1 ((see figure 1).

STEP	SIGNAL GENERATOR		OSCILLOGRAPH	ADJUST	WAVEFORM	REMARKS
	FREQUENCY	CONNECT TO				
1	24 mc. center frequency 10 mc. deviation (min.)	Pin 4 - V14	Pin 8 - V16 Direct	L 37 L 44		Use high generator output and low scope gain. Be careful to avoid overload.
2	As above	Pin 1 - V13	Pin 8 - V14 use Xtal Probe	L 34 L 35		As above.
3	As above	Pin 1 - V12	Pin 5 - V13 use Xtal Probe	L 31 L 32 L 9		As above. Sound trap L 9 adjusts the 21.9 mc dip in curve.
4	As above	Pin 1 - V11	Pin 5 - V12 use Xtal Probe	L 27 L 28 L 26		Use high generator output and low scope gain. Be careful to avoid overload. Sound trap L 26 adjusts the 21.9 mc dip in curve.
5	As above	Pin 1 - V10	Pin 5 - V11 use Xtal Probe	L 24 L 25		Use high generator output and low scope gain. Be careful to avoid overload.
6	As above	Pin 1 - V2	Pin 5 - V10 use Xtal Probe	L 5 L 6		As above. Readjust the contrast control if necessary.
7	As above	As above	Pin 8 - V16 Direct			As above. Overall response curve. See phasing adjustment.
8	4.5 mc. 400 cps AM	Pin 7 - V19	Pin 8 - V16 use Xtal Probe	L 48	Minimum scope indication.	Frequency must be accurate. Use crystal oscillator or crystal calibrated signal.

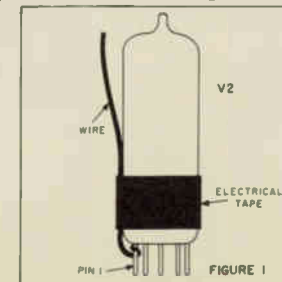
SOUND IF ALIGNMENT RA-101

STEP	SIGNAL GENERATOR		OSCILLOGRAPH	ADJUST	WAVEFORM	REMARKS
	FREQUENCY	CONNECT TO				
1	22 mc. center frequency 1 mc deviation (min.)	Pin 1 - V3	Pin 5 - V4 use Xtal Probe	Z2 Primary and secondary		Use high generator output and low scope gain. Be careful to avoid overload.
2	As above	Pin 1 - V4	Pin 5 - V5 Use Xtal Probe	Z3 Primary and secondary	As above	As above
3	As above	Pin 1 - V5	Junction R25 and R27 Direct	Z4 Primary and secondary		Avoid overload. Connect 100K resistor in series with scope lead.
4	As above	Pin 1 - V3	As above	Z2 Z3 Z4 If necessary	As above	As above. Overall sound IF curve.
5	As above	Pin 1 - V7	Pin 1 - V8 Direct	Z5 Primary and secondary		Discriminator curve. Adjust for maximum curve. Re-adjust Z3, Z4 if necessary.
STEP	SIGNAL SOURCE		ADJUST	INDICATION	REMARKS	
6	TV Signal test pattern. Adjust for best picture quality.		Z5 secondary (top slug)	Tuning meter swing equal either side of sound carrier.	Best picture quality and tuning meter null should coincide.	

PHASING

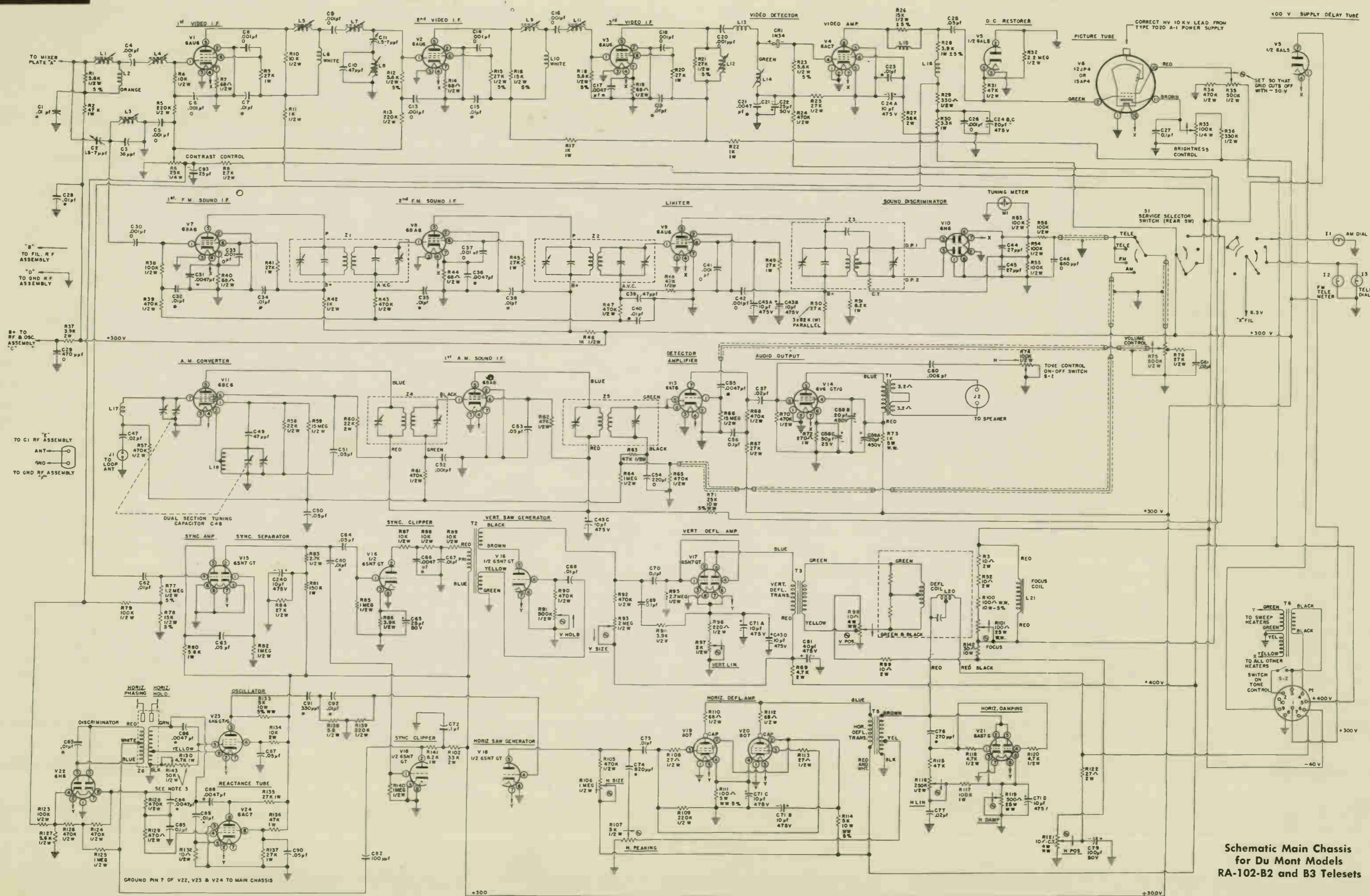
- When the alignment procedure has been completed, the phasing of the video IF strip should be checked and corrected if required.
1. Tune the receiver to the best signal available, preferably a station transmitting a test pattern.
 2. Adjust the Fine Tuning control to tuning meter null point.

3. Carefully examine the picture for ringing or the presence of spurious black response (smear) following black elements of the picture.
4. If either of these conditions is encountered, the V.I.F. slugs may be readjusted slightly to correct either condition.



ALIGNMENT NOTES

1. Remove the i-f, audio, sweep and sync chassis, yoke, focus-coil, service selector switch, tuning meter and inter-chassis cables from cabinet for required bench set up.
2. Place service selector switch in the TV position.
3. Disable the sweep chassis high voltage.
RA-101A — Place high voltage switch in off position.
RA-101B — Remove 1B3 high voltage rectifier tube.



Schematic Main Chassis
for Du Mont Models
RA-102-B2 and B3 Teletests

PARTS LIST

Table with columns: Sym. No., Reference Drawing or Part No., Description. Lists various electronic components like capacitors, resistors, and lamps.

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Table with columns: Part No., Description. Lists various electronic components like capacitors, resistors, and lamps.

POWER SUPPLY CHASSIS

CLUB CABINET PARTS

INDICATOR (RECEIVER) CHASSIS PARTS

AM TUNER PARTS

(All Items Fit Both Clifton and Club Models Except Where Noted)

RF SECTION PARTS

CLIFTON CABINET PARTS

POWER SUPPLY CHASSIS PARTS

POWER SUPPLY CHASSIS

Tube	Pin No.	Voltage
V1	1	-10 V + 23 AC
	2	250 V + 10 AC
	3	44 V + 56 AC
	4	80 V
	5	260 V
	6	100 V
V2	5	100 V
	2	0 V
V5	2	340 V
{V6 V7	2	400 V

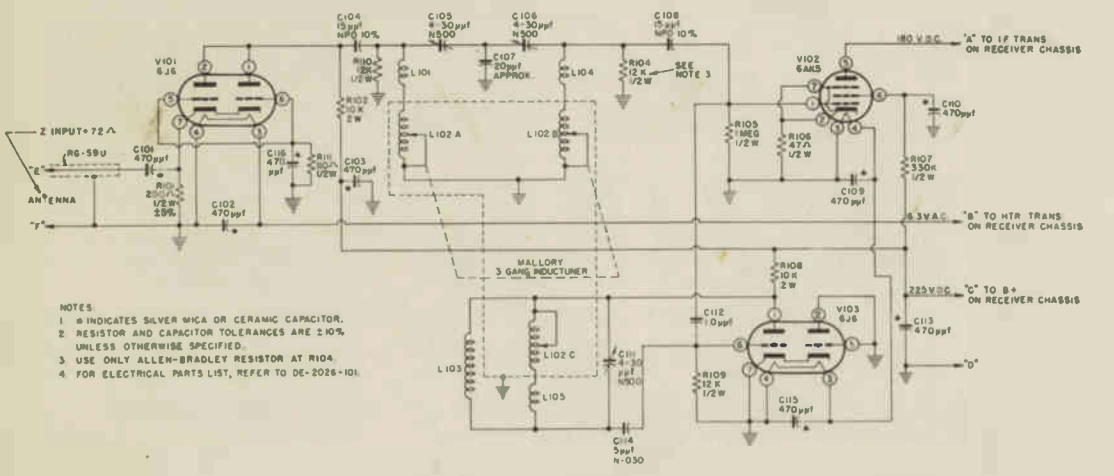


Figure 11
RF Tuner Schematic for Du Mont Models RA-102-B1, B2 and B3 Teletests

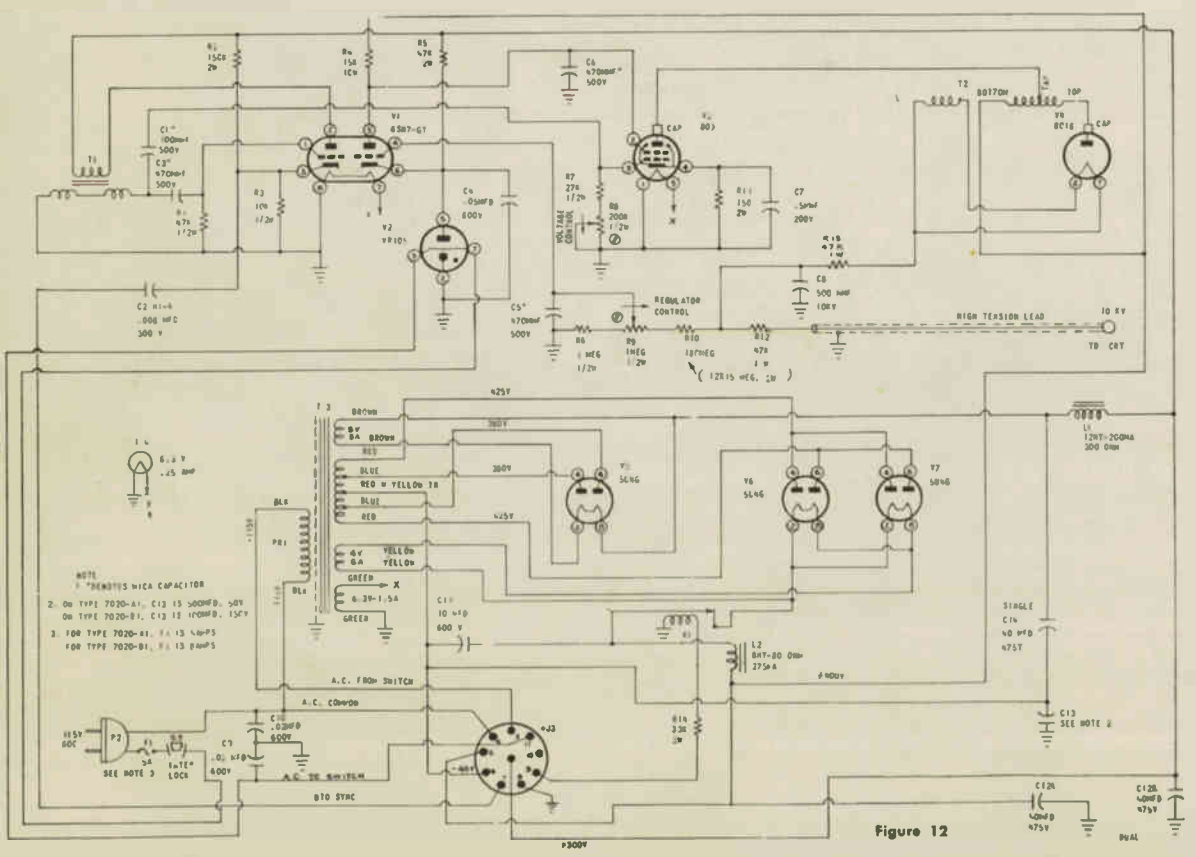


Figure 12
Power Supply Schematic for Du Mont Models RA-102-B1, B2 and B3 Teletests

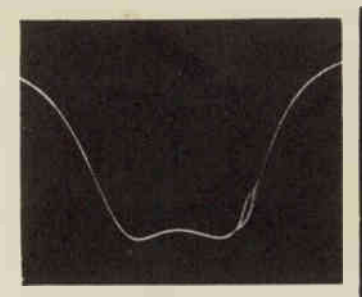


Figure 7-A
Response curve of 3rd video IF stage. Birdie at 26.4 mc.

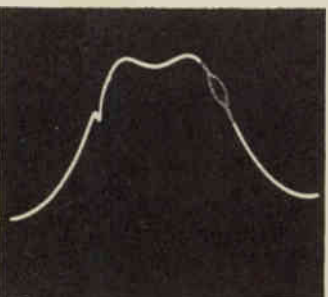


Figure 7-B
Response curve at 2nd video IF stage. Birdie at 26.4 mc.

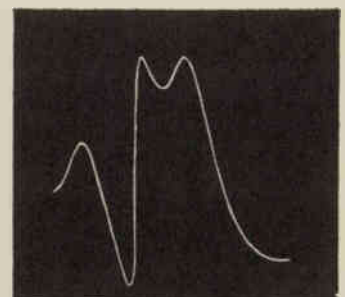


Figure 7-C
Alignment of 2nd sound trap. C11 in adjustment.

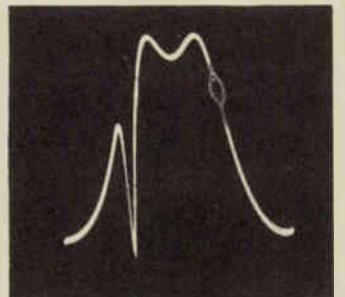


Figure 7-D
Alignment of 2nd sound trap. C11 adjusted for insufficient capacity. Birdie at 26.4 mc.

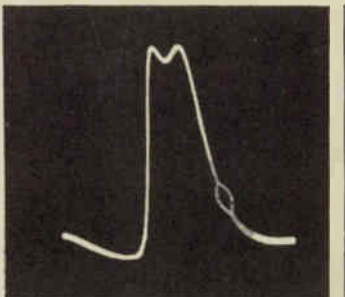


Figure 7-E
Alignment of 2nd sound trap. C11 adjusted for too much capacity.

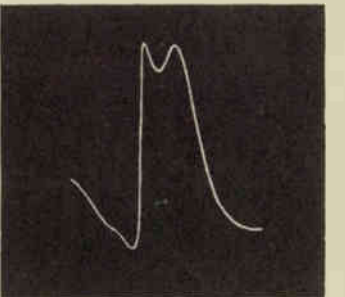


Figure 7-F
Alignment of 1st sound trap. C2 in adjustment.

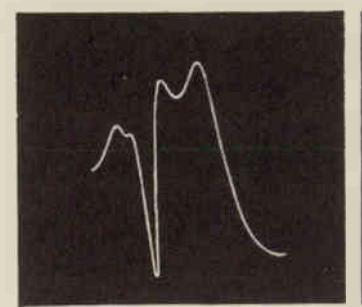


Figure 7-G
Alignment of 1st sound trap. C2 adjusted for insufficient capacity.

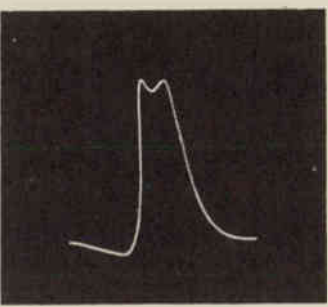


Figure 7-H
Alignment of 1st sound trap. C2 adjusted for too much capacity.

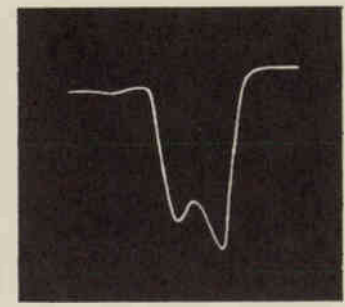


Figure 7-I
Overall video IF response curve.

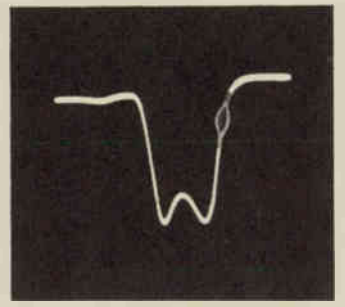


Figure 7-J
Overall video IF response curve corrected by retuning last stage. Birdie at 26.4 mc.

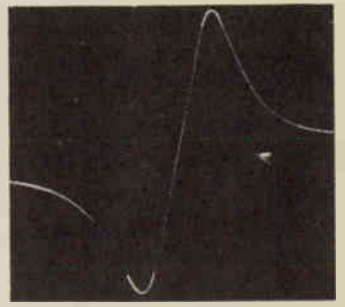


Figure 7-K
Properly aligned discriminator curve.

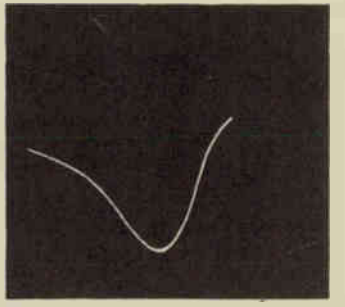


Figure 7-L
Properly aligned limiter curve.

DATA FOR ALIGNMENT

To Adjust	Type of Input Signal Required	Connect Generator Leads Across	Connect Output Leads Across	Leads Directly Into Oscillograph or Oscillograph Via Probe Detector	Adjust Coils Conform to Response Pattern Shown in	Remarks
L12	FM Signal Generator RF Signal Generator	Tube V3 Pin 1	Cathode-ray Tube Grid	Direct	7-A	RF Signal Generator at 26.4 mc
L9, L11	FM Signal Generator, RF Signal Generator	Tube V2 Pin 1	Tube V3, Pin 5	Probe Detector	7-B	RF Signal Generator at 26.4 mc
L5, L7, C11	FM Signal Generator	Tube V1 Pin 1	Tube V2, Pin 5	Probe Detector	7-C	Sound Trap Adjustment
C11	FM Signal Generator	Tube V1 Pin 1	Tube V2, Pin 5	Probe Detector	7-D	
C11	Generator	Pin 1	Pin 5	Probe Detector	7-E	
C2	FM Signal Generator	Grid of Mixer In RF Unit	Tube V1 Pin 5	Probe Detector	7-F	Use 6AK5 Adapter Tube in place of Mixer
C2	FM Signal Generator	RF Unit	Pin 5	Probe Detector	7-G	Use 6AK5 Adapter Tube in place of Mixer
C2	Generator	RF Unit	Pin 5	Probe Detector	7-H	Use 6AK5 Adapter Tube in place of Mixer
	FM Signal Generator	Grid of Mixer Tube In RF Unit	Cathode-ray Tube Grid	Direct	7-I	Use 6AK5 Adapter Tube
L12 returned	FM Signal Generator RF Signal Generator	In RF Unit	Tube Grid	Direct	7-J	Use 6AK5 Adapter Tube RF Signal Generator at 26.4 mc.
Z3	FM Signal Generator	Tube V9, Pin 1	Discriminator Output at Tele Switch	Direct	7-K	
Z2	FM Signal Generator	Tube V8, Pin 1	AVC Off Z2	Direct	7-L	
Z1	FM Signal Generator	Pin 1 Grid of Mixer RF Unit	Output at Junction R-47 and C-39	Direct	7-M	

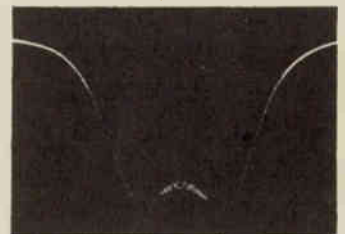


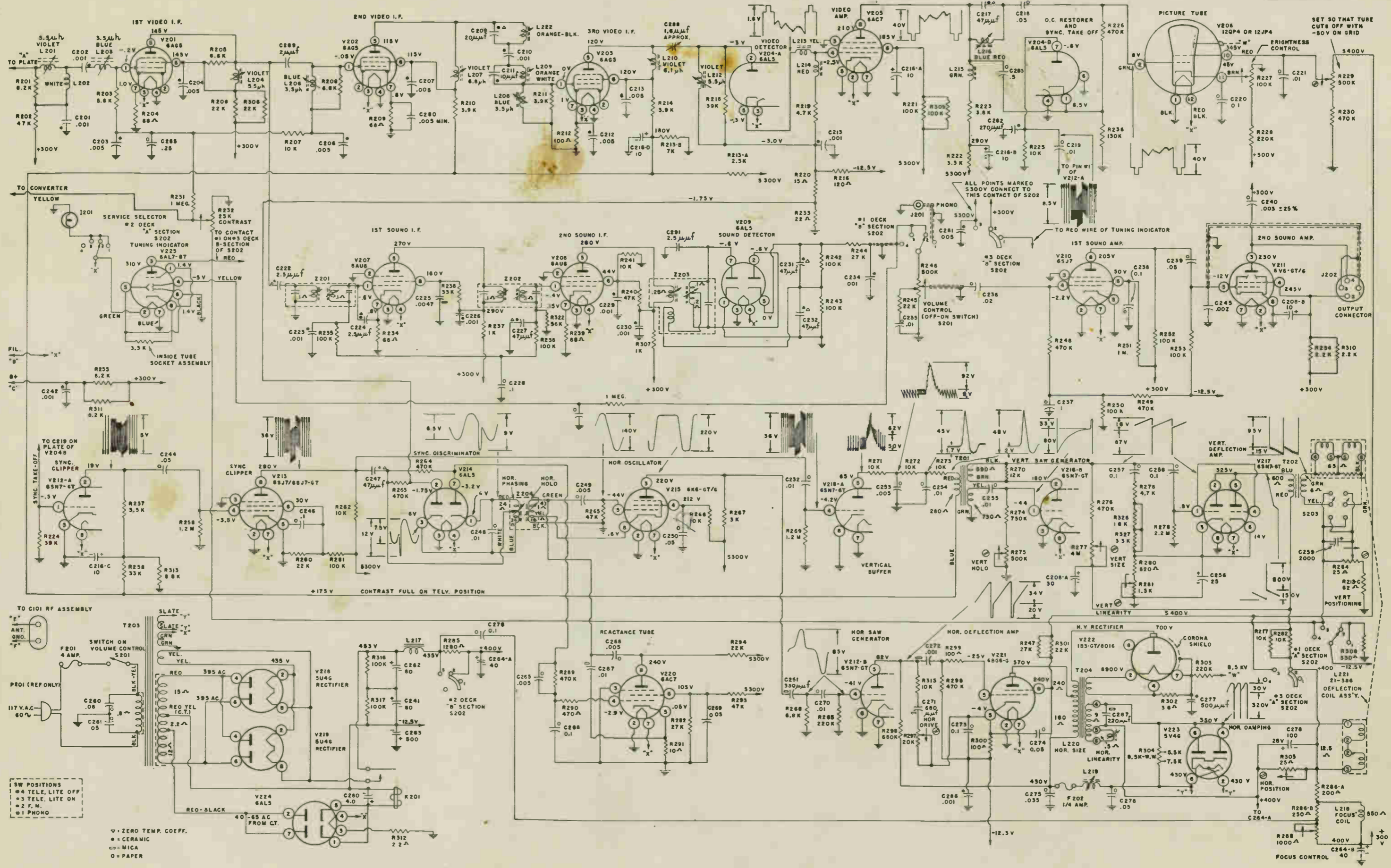
Figure 7-M
Overall sound IF curve. Birdie at 21.9 mc.

SOCKET VOLTAGES

All voltages are D-C with contrast control full clockwise. These voltages should be regarded as representative and not absolute. All measurements are taken with respect to ground.

MAIN CHASSIS

Stage	Tube Type	Plate		Screen Grid		Control		Grid	
		Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
V1	6AU6	5	175	6	105	7	0.7	1	-1.6
V2	6AU6	5	225	6	135	7	0.7	1	-1.6
V3	6AU6	5	235	6	140	7	0.7	1	-0.2
V4	6AC7	8	250	6	160	5	0	4	-1.5
V5	6AL5	2	0	5	26				
V6	6AL5	7	280	1	250				
V7	6BA6	5	210	6	115	7	1.0	1	-0.5
V8	6BA6	5	225	6	125	7	0.9	1	-0.3
V9	6AU6	5	45	6	25	7	0	1	-1.6
V10	6H6	3	4	4	0.5				
V11	6BE6	5	100	2	0	7			-1.8
V12	6BA6	5	100	6	65	7	0	1	-3.0
V13	6AT6	7	65	2	0	1			-1.7
V14	6V6	3	250	4	250	8	5.4	5	-25.0
V15	6SN7	5	200	6	0	4			-3.4
V15	6SN7	2	33	3	0	1			-0.9
V16	6SN7	2	180	3	9.0	1			0
V16	6SN7	5	200	6	0	4			-0.7
V17	6SN7	2	265	3	14	1			-0.7
V18	6SN7	2	68	3	0	1			-1.0
V18	6SN7	5	40	2	6	0			-32.5
V19	807			2	270	4	14	3	-4.4
V20	807				270	4	14	3	-4.4
V21	6AS7			6	58	1			46
V22	6H6	3, 5	-24	4		4, 8	-1.4		
V23	6K6	3	190	6	220			5	-19
V24	6AC7	8	170		77	5		4	-1.2

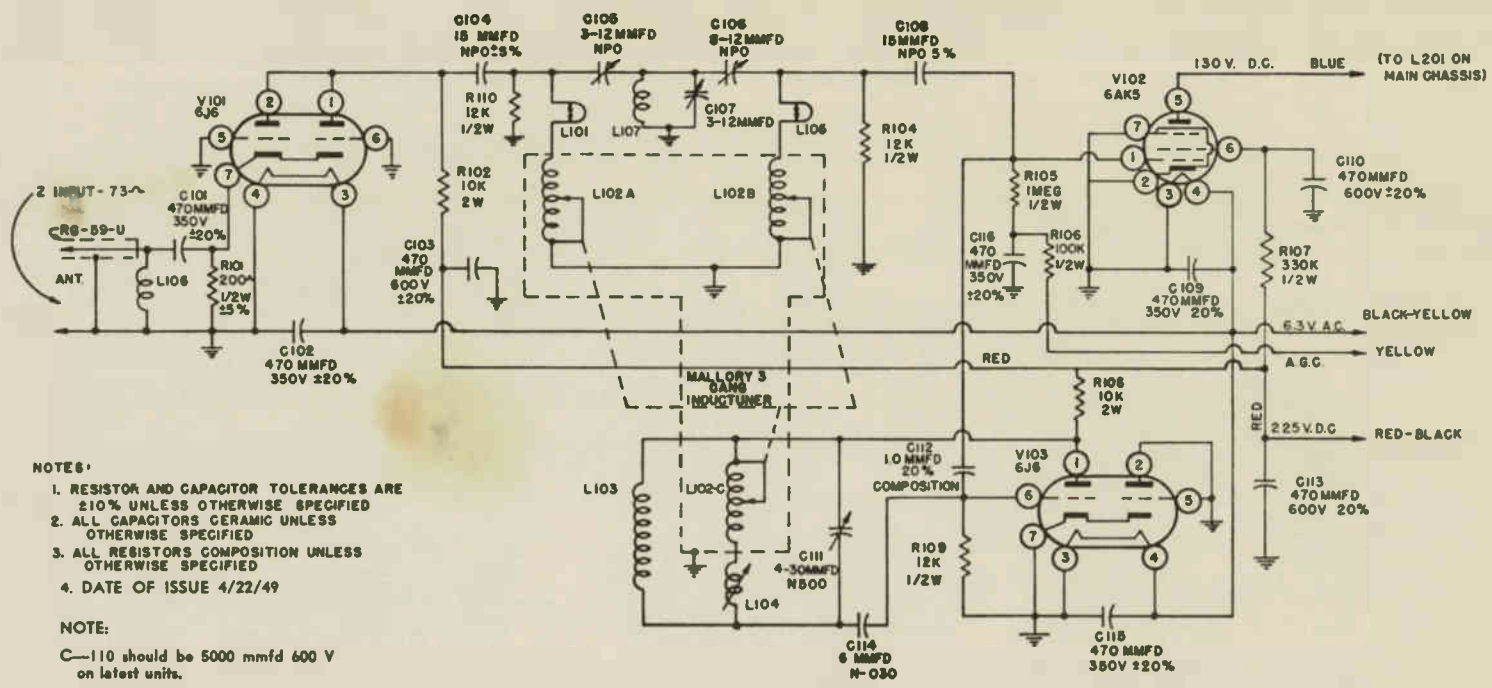


NOTE:
 1- ALL CAPACITOR VALUES ARE MICROFARAD UNLESS OTHERWISE SPECIFIED.
 2- ON S202, SECTION 28 CLOSURES AFTER ALL OTHER SECTIONS
 3- ISSUE 734 DATE 4/26/49

RF TUNING ASSEMBLY PARTS LIST

Table with columns: Symbol No., Part No., Description. Lists parts for Inputuner and Dial Assembly, Inputuner, and Dial Mechanism.

Table with columns: Symbol No., Part No., Description. Lists parts for Inductor end plate, Inductor, Coil, Inductor V end, Oscillator, Grid assembly, Antenna, Coupling, Resistor, and Tube.



NOTES: 1. RESISTOR AND CAPACITOR TOLERANCES ARE 210% UNLESS OTHERWISE SPECIFIED... 4. DATE OF ISSUE 4/22/49. NOTE: C-110 should be 5000 mmfd 600 V on latest units.

RECEIVER PARTS LIST RA-103C

Resistance Measurements - All Readings to Ground

Table with columns: Tube, 1, 2, 3, 4, 5, 6, 7, 8, 9. Lists resistance values for various tubes like V201, V202, V203, etc.

Instrument Used - RCA Model 195-A VoltOhmyst (for voltage and resistance) All readings in ohms K = thousand M = million

Small table with columns: 10, 11, 12. Values: 85K, 44K, .1

Main Receiver Parts List RA-103C table with columns: Symbol No., Part No., Description, and multiple columns of part numbers and descriptions.

**PARTS LIST FOR
AM Tuner RA-104-A3 Wellington**

Symbol No.	Part Number	Description
C401	03018551	Cap V 3 sections
C402	03014390	Cap Ce 330 mmf 20% 350V
C403	03012730	Cap Ce 47 mmf 10% 500V
C404	03014200	Same as C403
C405	03000950	Cap Pa .05 mf 25% 200V
C406	03001570	Cap Pa .005 mf 25% 600V
C407	Same as C406	
C408	Same as C406	
C409	Same as C402	
C410	Same as C402	
C412	Same as C406	
C413	03012560	Cap Pa .01 mf 25% 600V
C414	03014400	Cap E 30/30/20 mf
C416	03018570	Cap F Pa .02 mf 20% 600V
C417	02018560	Same as C416
C420	03014430	Cap Pa .002 mf 10% 600V
C421	Same as C406	
C422	03013910	Cap Pa .1 mf 25% 200V
C423	Same as C406	
I 401	12000840	Lamp inc .25 amp 6.3V
I 402	Same as I 401	
J 403	09015921	Connector Asy
L 401	21004321	Antenna Coil Asy
L 402	21004331	Asy RF Coil
L 403	21004451	Coil Osc Asy
P 401	50002980	Cable Asy Power
P 402	09006472	Connector Asy
R 401	02032580	Res F C 470K 20% 1/2W
	02042580	
	02052580	

R 402	02032500	Res F C 22K 20% 1/2W
	02042500	
	02052500	
R 403	02032660	Res F C 10 meg 20% 1/2W
	02042660	
	02052660	
R 404	02032420	Res F C 1K 20% 1/2W
	02042420	
	02052420	
R 405	02032430	Res F C 1.5K 20% 1/2W
	02042430	
	02052430	
R 406	02037920	Res F C 18K 10% 2W
R 407	02032600	Res F C 1 meg 20% 1/2W
	02042600	
	02052600	
R 409	02032520	Res F C 47K 20% 1/2W
	02042520	
	02052520	
R 410	01006670	Res V C 500K 20% 1/4W
	01017200	
	01012200	
R 411	Same as R 403	
R 412	02032060	Res F C 270K 10% 1/2W
	02042060	
	02052060	
R 413	02032090	Res F C 470K 10% 1/2W
	02042090	
	02052090	
R 414	02037690	Res F C 220 ohms 10% 2W
R 415	Same as R 406	
R 416	02107830	Res F W 750 5% 10W
R 417	02037770	Res F C 1K 10% 2W
R 419	Same as R 412	
R 420	02031840	Res F C 3.9K 10% 1/2W
	02041840	
	02051840	

R 421	02031940	Res F C 27K 10% 1/2W
	02041940	
	02051940	
R 422	01007070	Res V C 1 meg 20% 1/4W
	01012100	
S 401	05003821	Switch AM Tuner
T 401	20004151	Transformer Power
V 401	25000240	Tube Elec 6BA6
V 402	25000250	Tube Elec 6BE6
V 403	Same as V 401	
V 404	25000210	Tube Elec 6SQ7GT/G
V 405	25000090	Tube Elec 6V6GT/G
V 406	25000220	Tube Elec 5Y3GT
Z 401	20004041	Transformer IF
Z 402	20004042	Transformer IF
	35006771	Bracket Mounting
	42001591	Shield Light
	38001451	Grommet Shock Mount
	43000321	Bushing
	34001100	Socket Tube Octal
	34001740	Socket Tube 7 Prong
	38000600	Strain Relief
	51000940	Terminal Lug Ring
	09000880	Connector Female 2 contact
	41001321	Assembly Dial
	41001361	Insulator Sheet Coil
	12002792	Insulator Sheet
	12002781	Dial Light Asy
	43000443	Bracket Dial Light
	30008292	Spacer
	30008300	Pulley
	30008601	Belting
	30012831	Spring AM Tuner
	30010161	Shaft AM Tuner
	45001581	Bearing Sleeve
	45001711	Plate Front
		Pointer Dial

45001591 Dial AM Tuner
64000140 Button Plug

**PARTS LIST FOR SAVOY AND WINTHROP TUNERS
SAME AS ABOVE, EXCEPT FOR THE FOLLOWING**

**AM TUNER
RA-103-A**

Symbol No.	Part Number	Description
C 401	3C-12714	Cap V 3 section
C 419	3-1439	Cap F Ce 330 mmf 20% 350V
J 403	9-486	Connector asy female 2 contact
P 402	9-501	Cable asy male 2 contact
S 401	5C-12914	Switch

**AM TUNER
RA-103C**

Symbol No.	Part Number	Description
C 401	3C-12714	Cap V 3 section
J 403	9A-13516	Connector asy
P 402	9B-13514	Connector asy
S 401	05003251	Switch

**Resistance Measurements — All Readings to Ground
RA-103C and RA-104A AM Tuner**

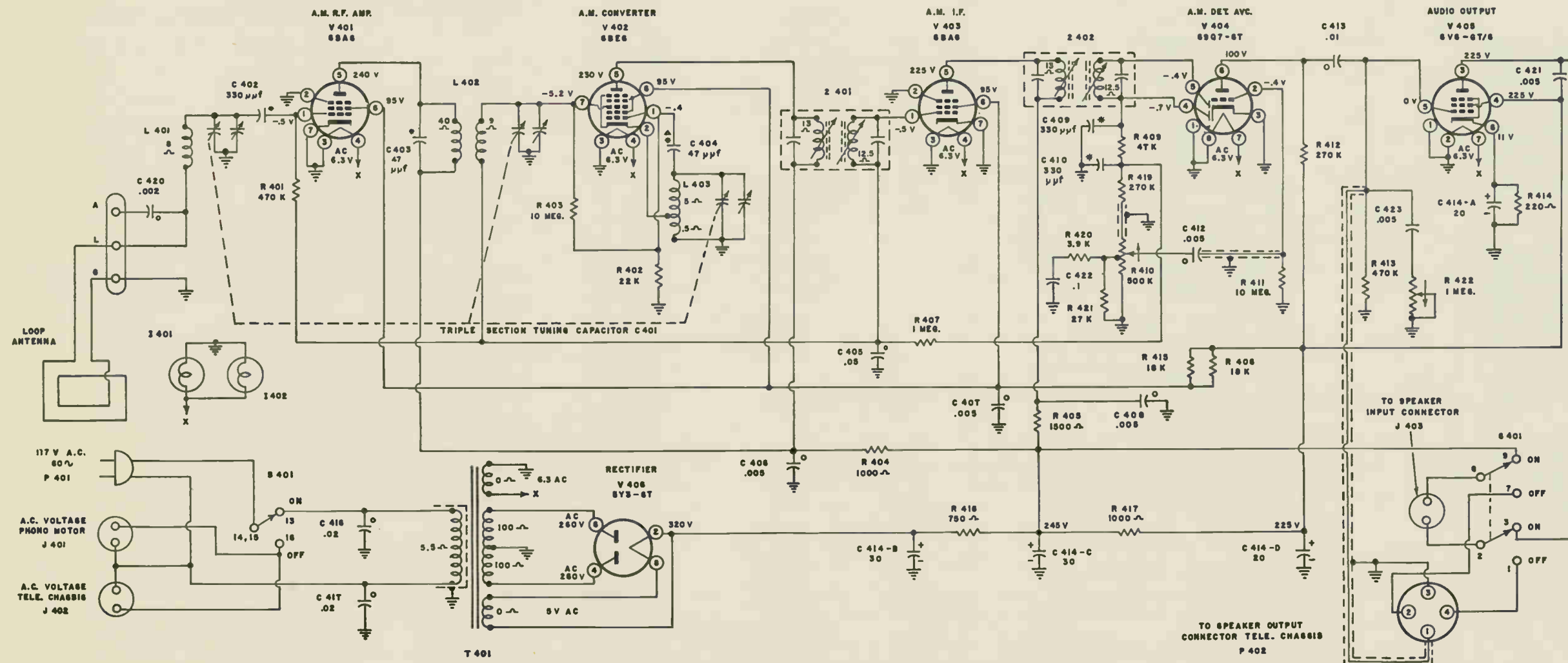
Tube	1	2	3	4	5	6	7	8
V 401	2M	0	0	.05	Inf	Inf	0	
V 402	20K	0.5	0	.05	Inf	Inf	1.5M	
V 403	1.5M	0	0	.05	Inf	Inf	0	
V 404	0	10M	0	600K	600K	Inf	.05	0
V 405	0	0	Inf	Inf	470K	Nc	.05	220
V 406	Nc	Inf	Inf	109	Inf	116	Nc	Inf

Instrument used — RCA model 195-A VoltOhmyst for voltage and resistance.
All readings in ohms. K = thousand M = million

Resistance Readings of Coils

All readings in ohms.
All readings shown were taken with coils disconnected.

Symbol	Resistance in ohms	Pri.	Sec.
L 401	8.0		
L 402	40.0	9.0	
L 403	.5	5.0	
Z 401	13.0	12.5	
Z 402	13.0	12.5	
T 401	5.5	200.0	



ALIGNMENT PROCEDURE FOR DUMONT AM TUNER

The alignment should be made with the volume control fully on and tone control set for high frequency response. The output from the signal generator should be maintained as low as possible to prevent A. V. C. action from interfering with the correct alignment.

Connect an output meter across the voice coil of the speaker. Turn on signal generator and AM Tuner for approximately five minutes to stabilize. Connect a common ground to each unit. When connecting the signal generator output leads to the receiver, place a .25 mfd condenser in series with the inner conductor of the signal generator output lead.

1. Turn the tuning dial to the extreme low frequency end. (Gang condenser fully closed.)
2. Connect the signal generator output lead to the converter stator of the tuning capacitor C 401.
3. Set signal generator to 455 KC, and adjust tuning slugs on I. F. coils Z 402 and Z 401 (secondary and primary) in the order given for maximum deflection, reducing generator output as required. Repeat tuning until maximum output is obtained.
4. Connect generator to antenna input terminal.
5. Turn tuning dial pointer to 1500 KC. Feeding in a 1500 KC signal from generator adjust RF, converter and oscillator trimmers on tuning capacitor C 401 for maximum audio output.

**DUMONT A.M. TUNER USED IN
*SAVOY AND WELLINGTON TELESETS**

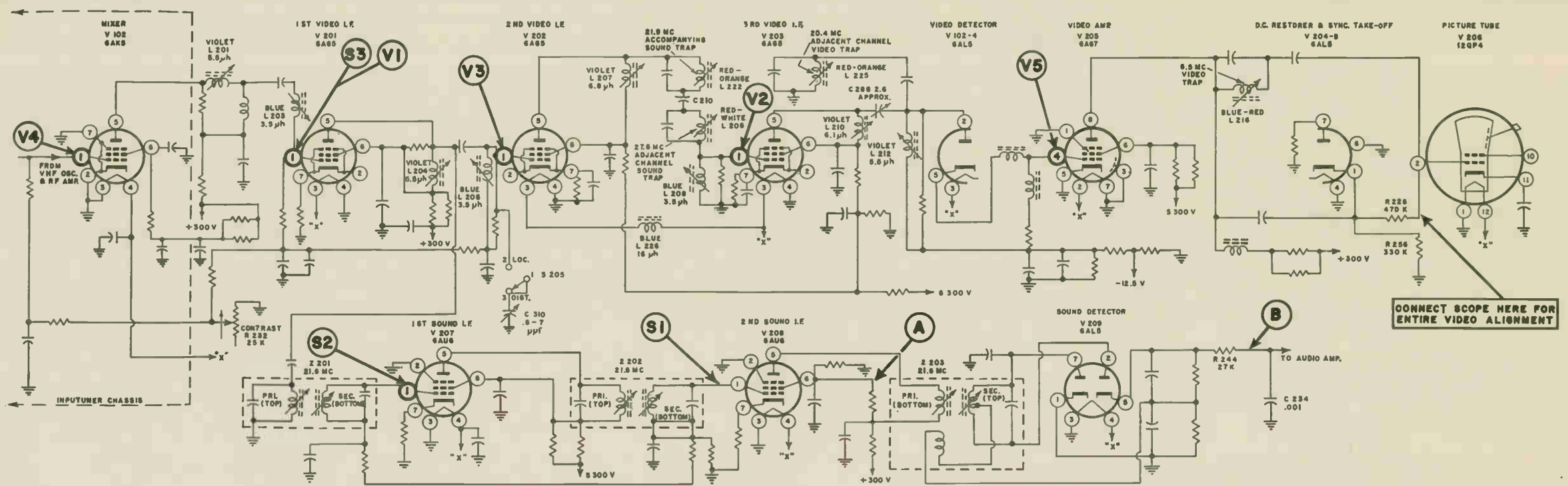
PHASE CORRECTION PROCEDURE

Even though the alignment has been performed properly, it is usually necessary to correct the phase response of the video IF strip in order to remove smear and ringing from the picture. The procedure for this is to tune in to a strong test pattern known to be of good quality and ghost-free (by observation on several normal Tele-sets). If smear or ringing is observed, the following adjustments are recommended. No other adjustments should be made. Limit adjustments only to those absolutely necessary.

Make the following adjustments in the order given, not more than one-half turn either way.

- Smear: L207, L208, L212, L203
- Ringing: L204, L210, L211
- Resolution: L204, Primary (top) Z201, L222, L216

Be careful not to introduce sound into the picture.



ALIGNMENT PROCEDURE

The alignment of a Television receiver is a procedure that must be followed very carefully in order that the end result is comparable to that obtained when aligned at the factory. Before attempting to align, the serviceman must be sure that alignment is required. If there is any doubt in the serviceman's mind regarding the need for alignment, a quick check can be made by viewing the overall response of the video IF strip. This is accomplished by performing step No. 6 in the alignment procedure.

EQUIPMENT NEEDED

Sweep Generator

This generator should be capable of putting out a band of frequencies from about 20 to 30 megacycles. Some means for identifying the frequency of various parts of the response curve must be available. To effect this, the sweep generator must either have an internal marker circuit or an external RF generator to perform the same function, will have to be used.

In the alignment table under the heading "Type of Input Signal Required," the description "Wobulated and unmodulated RF" means that both the sweep generator output (wobulator) and the unmodulated RF generator are to be fed into the point designated. It should be understood that both these units will have to be used if the sweep generator does not have an internal marker generator.

If, however, the sweep generator has an internal marker generator only the output from this one unit need be fed into the designated point.

Oscillograph

An oscillograph is used as a means of visually indicating the response of the stage or stages under observation.

GENERAL INFORMATION

All of this equipment must be securely grounded to the receiver being aligned. This grounding can be accomplished by using a metal top bench, preferably copper. If such a bench is not available, these units should be bonded together by the use of heavy metal braid between the chassis. Ordinary wire is not enough to effectively place all units at the same potential.

Once the equipment is set in place, the generators and receiver should be allowed to run at least 15 minutes before starting to align.

Additional equipment necessary for alignment is what is referred to as a 6AK5 adapter tube. This is simply a 6AK5 with a fine wire soldered to pin No. 1. It may be necessary to fasten this wire to the side of the tube with scotch tape to prevent it from shorting against the bottom of the shield. This tube is used to permit feeding the generator output into the grid of the mixer stage without disturbing the Inputuner.

In the procedure, reference is made to the use of a "Probe Detector." This device is merely a crystal rectifier with the necessary filter. Its purpose is to permit the observation of the response of a single stage when viewed ahead of the video detector.

VIDEO IF ALIGNMENT TABLE (RA-103D)

- Notes:
1. Remove 6AB4 oscillator V103 and 6J6 RF amplifier V101 from Inputuner before attempting to align set.
 2. Place tuner at extreme high end of range.
 3. Set R-232 to give -5V from center arm to ground on VTVM unless otherwise noted.

Step No.	To Adjust	Type of input signal required	Connect generator at point number	Scope thru crystal probe or direct	Remarks
1	L222 Z201 (top)	21.9 mc with 400 cycles AM	V1	Direct	Tune for minimum signal on scope.
2	L225	20.4 mc with 400 cycles AM	V1	Direct	Tune for minimum signal on scope.
3	L209	27.9 mc with 400 cycles AM	V1	Direct	Tune for minimum signal on scope.
4	L212 L210 C288	Wobulated and unmodulated RF 6 mc sweep Set center frequency at about 25 mc	V2	Direct	Short junction of L209 and C210 to ground. Contrast control off. L212 tunes left side of curve. L210 tunes right side of curve. C288 affects band-width. Peaks should be even. Carrier must not exceed 15% down from right peak. See Fig. 1.
5	L208 L207 L209	Wobulated and unmodulated RF	V3	Direct	L208 positions center peak. L207 affects shoulder amplitude. L209 positions carrier on right shoulder. See Fig. 2.
6	L206 L204	Wobulated and unmodulated RF	V1	Direct	Use 100 mmf in series with generator. See Fig. 3.
7	L203 L201 L204 L206	Wobulated and unmodulated RF	V4 use 6AK5 with lead attached.	Direct	Use 100 mmf in series with generator. 22.9 mc marker slightly inside low frequency peak. 26.4 mc 50% down. See Fig. 4. If peak at 22.9 mc cannot be obtained, re-adjust L-208 slightly to get dashed curve of Fig. 2.
8	L216	4.5 mc with 400 cycles AM	V5	Probe detector	Tune for minimum signal on scope.

SOUND IF ALIGNMENT TABLE

1	Z203	21.9 mc with 400 cycles modulation	S1	Direct at point B	Detune secondary (top) Z203, tune bottom for maximum, then tune top for sharp minimum on scope.
2	Z203	Wobulated and unmodulated RF 1MC sweep Set center frequency at 22 mc	S1	Direct at point B	If necessary, tune bottom for symmetry of curve.
3	Z202	Wobulated and unmodulated RF 1MC sweep	S2	Direct at point A	Tune Z202 for maximum amplitude and symmetry. Primary (top) affects frequency. Secondary affects symmetry and amplitude. See Fig. 5.
4	Z201	Wobulated and unmodulated RF 1MC sweep	S3	Direct at point A	Tune secondary (bottom) Z201. If necessary to obtain curve of Fig. 5, retune top and bottom of Z202 slightly.
5	Overall	Wobulated and unmodulated RF 1MC sweep	S3	Direct at point B	If necessary readjust Z202 primary or secondary or Z201 secondary for symmetrical S curve.
6	See phase correction procedure.				

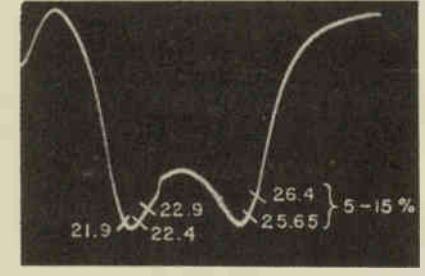


Fig. 1

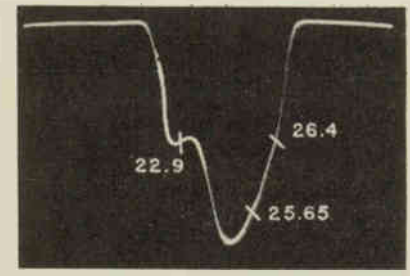


Fig. 4

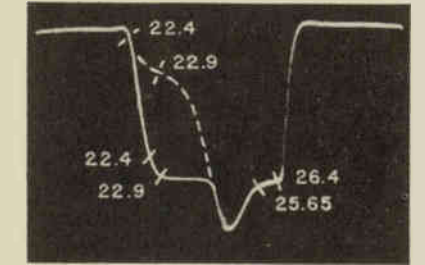


Fig. 2

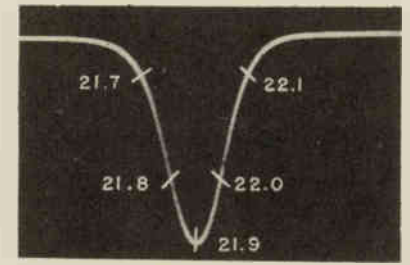


Fig. 5

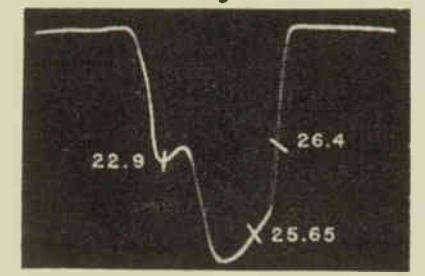


Fig. 3

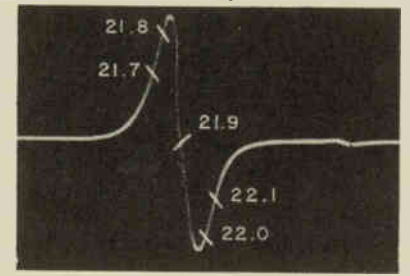
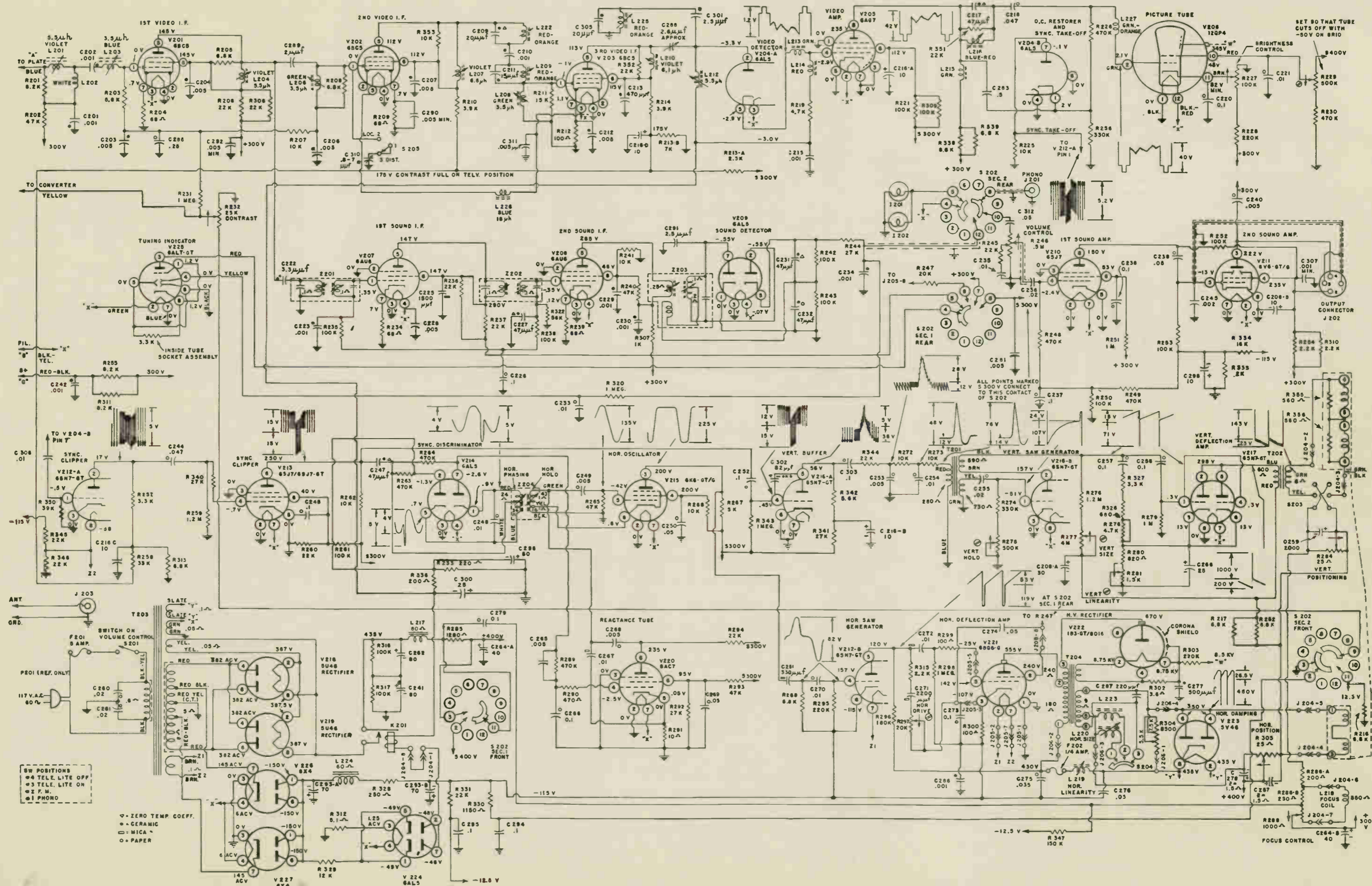


Fig. 6



MISCELLANEOUS PARTS LIST

Westwood and Fairfield Telesets RA-110A

Table listing parts for Westwood and Fairfield Telesets RA-110A, including items like Coll Focus Assy, Deflection Yoke, Connector Male 8 Contact, Res F C 560 ohms 10% 1/2 W, Speaker Assy, Bessel Dial, Window Safety Glass, etc.

Westwood Only

Back Panel
Fairfield Only
Back Panel

Rumson, Sheffield and Canterbury Telesets, RA-103D

Table listing parts for Rumson, Sheffield and Canterbury Telesets, RA-103D, including items like Lever Switch, Bessel Dial, Window Safety Glass, Mask CRT, Cable Assy Power, Plate AC Interlock, etc.

Rumson Only

Sheffield and Canterbury Only

Hastings and Wellington Telesets RA-104A

Table listing parts for Hastings and Wellington Telesets RA-104A, including items like Assy Focus Coil, Deflection Yoke, Connector Male 8 Contact, Res F C 560 ohms 10% 1/2 W, Tube CRT 16DP4, Cushion CRT, Bessel Dial Inputuner, etc.

Hastings Only

Wellington Only

Abbreviations used: C Cap Ce, Composition Capacitor Ceramic, E Electrolytic, Electrolytic Electronic Fixed, Pa Res, Paper Resistor, Wire Wound. Unless otherwise stated, the tolerance shown is plus and minus of the indicated value. Where two or more part numbers are shown, the second and third numbers, if any, are alternate parts.

Main parts list table with columns for Symbol No., Part No., Description, Symbol No., Part No., Description, Symbol No., Part No., Description, Symbol No., Part No., Description. Includes parts like L201, L202, C201, C202, R201, R202, etc.

Note: Used in Rumson - RA-103D and Hastings RA-104A only

Parts Used in RA-103D Telesets Only

Parts Used in RA-104A Telesets Only

The following changes in the RA-104A list apply to the Wellington only:

Parts Used in RA-110A Telesets Only

Parts Used in RA-103D and RA-104A Telesets Only

Parts Used in RA-104A and RA-110A Telesets Only

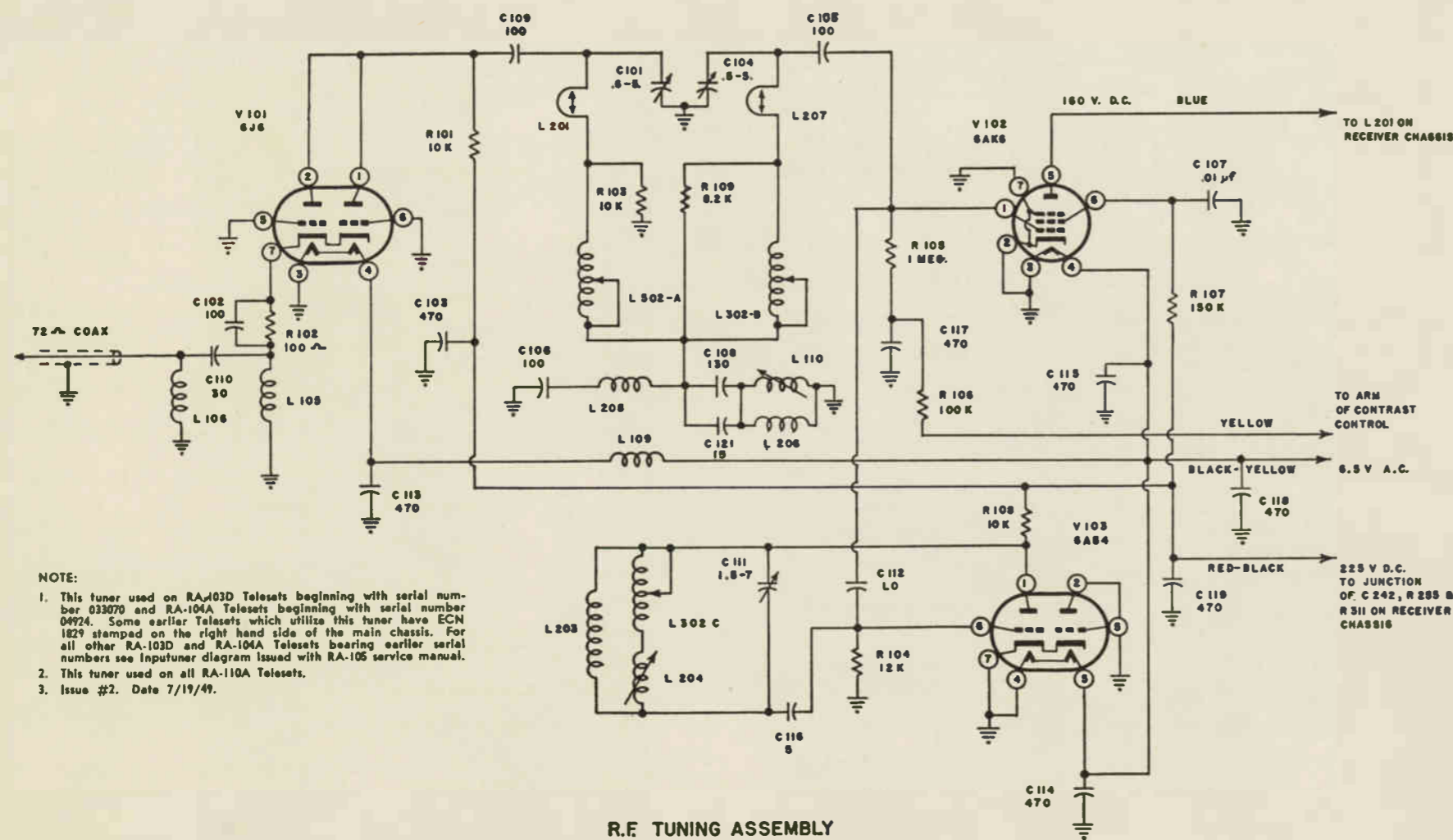
RF TUNING ASSEMBLY PARTS LIST

C101-117		89001702 Inputuner and Dial Assembly		R105-117			
C101	03016650	Cap V P .5/5 mmf 500V	C118	Same as C113	R105	02082130	Res F 1 meg 1/4W 10%
C102	03016700	Cap F Ce 100 mmf 500V	C119	Same as C103	R106	02042110	Res F 100K 1/4W 10%
C103	03016480	Cap F Ce 470 min 600V	C121	03014580	R107	02082030	Res F 150K 1/4W 10%
C104	03014600		L105	21004571	R108	Same as R101	
C105	Same as C101		L106	Same as L105	R109	02081880	Res F 8.2K 1/4W 10%
C106	Same as C102		L109	Same as L105	V101	25000190	Tube 6J6
C107	03015920	Cap F Ce .01 min 450V	L201	21004921	V102	25000180	Tube 6AK5
C108	03016660	Cap F M 130 mmf 5%	L203	21004041	V103	25001760	Tube 6AB4
C109	Same as C102		L204	21004891	X101	34002210	Socket Black Phenolic
C110	03018070	Cap F Ce 30 mmf 5%	L206	21004951	X102	Same as X101	
C111	03018570	Cap F Ce 1.5/7 N800	L207	21004921	X103	34002050	Socket Ceramic
C112	03012150	Cap F Ce 1 mmf 500V	L208	21004941		42001240	Shield Tube
C113	03016470	Cap F Ce 470 min 850V	L302	21004691		42001250	Shield Tube
C114	03014590		R101	02087890		45001301	Dial
C115	Same as C113		R102	02087890		45001081	Pointer
C116	03016660	Cap F Ce 5 mmf N150	R103	02080240			
C117	Same as C113		R104	02081890			
				02081900			
				02041900			

RESISTANCE READINGS OF COILS

(All readings in ohms)
All coil readings shown were taken with coils disconnected.

Symbol	Reading
L201	0.8
L202	0.2
L203	0.8
L204	1
L205	1
L206	0.75
L207	1
L208	0.5
L209	0.3
L210	1
L211	1.4
L212	0.9
L213	8.8
L214	11
L215	5.3
L216	1
L219	38
L220	0.4
L222	0.2
L223	0.15
L225	0.2
L226	0.2



NOTE:
1. This tuner used on RA-103D Telesets beginning with serial number 033070 and RA-104A Telesets beginning with serial number 04924. Some earlier Telesets which utilize this tuner have ECN 1829 stamped on the right hand side of the main chassis. For all other RA-103D and RA-104A Telesets bearing earlier serial numbers see Inputuner diagram issued with RA-105 service manual.
2. This tuner used on all RA-110A Telesets.
3. Issue #2. Date 7/19/49.

R.F. TUNING ASSEMBLY
(BOTTOM-COUPLED INPUTUNER)

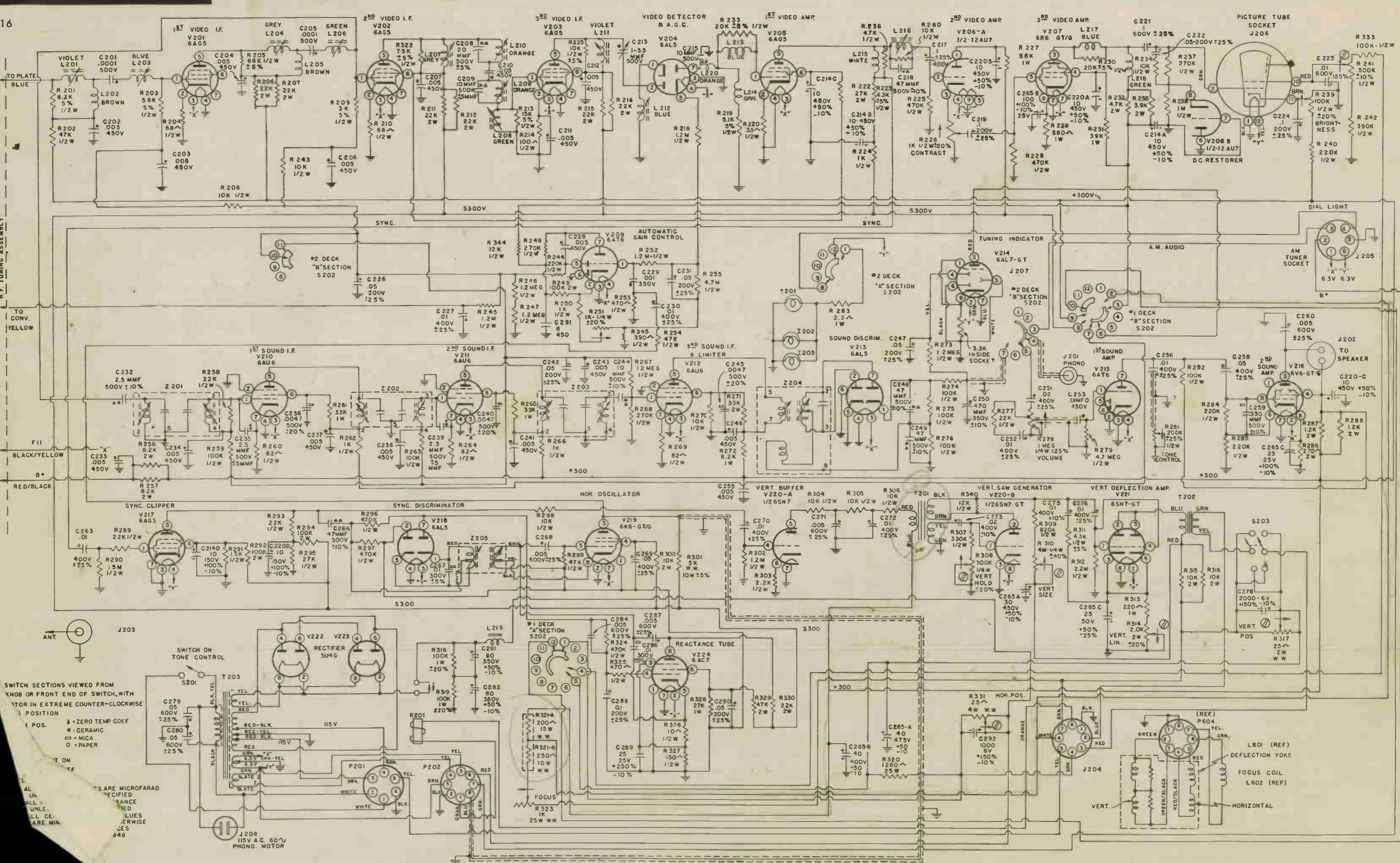
RA-103D, RA-104A and RA-110A Resistance Measurements — All Readings to Ground

Tube	1	2	3	4	5	6	7	8	9
V201	1.2M	.68	.06	0	18K	18K	.68		
V202	1.2M	.68	.16	0	9K	9K	.68		
V203	.1	100	.06	0	9K	9K	100		
V204	230K	9K	.06	0	14K	0	10K		
V205	0	.05	0	14K	0	64K	0	10K	
V206									
V207	280K	0	0	.05	17K	17K	.68		
V208	68K	0	0	.05	7K	10K	.68		
V209	0	100K	0	.05	160K	0	100K		
V210	0	0	0	560K	0	1M	.06	115K	
V211	0	.06	7.6K	7.2K	115K	2K	0	0	
V212	89K	10K	0	260K	190K	10K	14K	14K	
V213	0	0	0	1.2M	0	20K	.06	16K	
V214	500K	240	0	.05	500K	Nc	1M		
V215	0	0	11K	16K	47K	6K	.05	16	
V216	800K	1.4M	0	1M	40K	0	0	.06	
V217	1M	12K	1.3K	2.2M	12K	1.3K	.05	0	
V218	Nc	Inf.	10K	12	6	18	9K	Inf.	
V219	0	Inf.	5	12	6K	18	6.5K	Inf.	
V220	0	0	0	1.5M	10	18K	.06	29K	
V221	0	14K	10K	1M	1M	6.1K	14K	28K	Cap 14K
V222	Nc	Inf.	Inf.	Inf.	Nc	Inf.	Nc	14K	Cap 14K
V223	*15K	14K	**120K	6.5K	6.5K	6.5K	6.5K	14K	
V224	28K	5.7K	5	.05	28K	Nc	5.7K		
V225	3.3K	.05	6.1K	1.1M	0	0	0	3.3K	
V226	10K	10K	0	.05	Nc	10K	5		
V227	10K	Nc	0	.05	10K	10K	5		

Instrument used — RCA Model 195-A Volt-ohm-myst (for voltage and resistance)
All readings in ohms. Line voltage 117 volts A.C. for voltage readings.
K = thousand M = million
* Varies between 15K and 70K depending on setting of Brightness Control (R227).
** Varies between 7K and 240K depending on setting of CRT Sensitivity Control (R229).

1	2	10	11	12
0	800K	10K	40K	.05

R.F. TUNING ASSEMBLY



SWITCH SECTIONS VIEWED FROM KNOB OR FRONT END OF SWITCH, WITH ROTOR IN EXTREME COUNTER-CLOCKWISE POSITION

- Legend for component types: ZERO TEMP COEF, CERAMIC, MICA, PAPER, MICROFARAD, etc.

RESISTORS ARE MICROFARAD UNLESS OTHERWISE SPECIFIED

Typical Resistance Measurements

All readings in ohms unless otherwise stated.

(Inf.=Infinite K=Thousand M=Million)

Tube	1	2	3	4	5	6	7	8	9
V201	2.5M	65	0.05	0	22K	14K	65		
V202	2.5M	65	0.05	0	22K	22K	65		
V203	0.2	110	0.03	0	22K	22K	110		
V204	0.2	0.2	0	0.05	5.4M	Inf.	5.5K		
V205	5.6K	24	0.05	0	17K	50K	24		
V206	17K	0.5M	900	0.05	0.05	0	0	1M	0
V207	Inf.	0	18.5K	52K	52K	11K	0.05	370	
V208	6M	3.1K	0	0.05	2.8M	0	280K		
V210	1.5M	0	0.05	0	12K	47K	90		
V211	1.5M	0	0.05	0	12K	47K	90		
V212	800K	0	0.05	0	15K	6.8K	85		
V213	200K	100K	0.05	0	0	0	100K		
V214	8.5K	0.05	11K	1.4M	0	0	0	3.5K	
V215	4.9M	0	0	0.05	Inf.	Inf.	180K		
V216	Inf.	0.05	12K	12K	0.5M	220K	0	800	
V217	1.6M	0	0	0.05	40K	15K	0		
V218	520K	0	0.05	0	520K	Inf.	1M		
V219	0	0	17K	22K	47K	500K	0.05	14	
V220	580K	2M	0	1.2M	42K	2.5K	0	0.65	
V221	9.1M	17K	1.8K	2.1M	17K	1.6K	0.05	0	
V222	Inf.	Inf.	Inf.	12	Inf.	11	Inf.	Inf.	
V223	Inf.	Inf.	Inf.	12	Inf.	11	Inf.	Inf.	
V224	0	0.05	145	1.5M	185	20K	0	24K	

Typical Voltage Measurements

Line 117V. Antenna disconnected. All readings in volts.

Tube	1	2	3	4	5	6	7	8	9
V201	-6.65	0.6	6.8AC	0	260	150	0.6		
V202	-6.65	1.0	6.8AC	0	260	260	1.0		
V203	0	1.4	6.8AC	0	175	175	1.4		
V204	0	0	0	4.8AC	1.65				
V205	-0.3	0.25	6.8AC	0	285	110	-0.25		
V206	260	0	0	8.4	8.8AC	6.8AC	0	8.8	0
V207		0	303	200	0	210	8.8AC	20	
V208	1.0	7.4	0	8.8AC	-4.5	0	275		
V210	0.65	0	6.8AC	0	260	170	1.2		
V211	0.05	0	6.8AC	0	260	260	1.0		
V212	-0.25	0	6.8AC	0	240	40	8.25		
V213	0.65	-0.25	6.8AC	0	0	0	-7.6		
V214	1.1	6.8AC	810	0.8	0	0	0	1.0	
V215	-0.75	0	0	6.8AC	-1.0	-0.9	160		
V216		6.8AC	285	260	0	0	0	8.7	
V217	-1.1	0	0	6.8AC	50	40	0		
V218	7.8	0	6.8AC	0	7.4				
V219	0	0	220	225	-42	7.4	6.8AC	0.55	
V220	-0.6	120	0	0	210	2.0	0	6.8AC	
V221	0.3	285	18.5	0.8	285	18.5	6.8AC	0	
V222		425		400AC		400AC		425	
V223		425		400AC		400AC		425	
V224	0	6.8AC	0.65	-0.65	0.7	0.8	0	225	

MODEL RA-105 TELESET

5.0 PARTS LIST

Abbreviations used:
 Res Resistor
 Cap Capacitor
 V Variable
 F Fixed
 C Composition
 W Wire Wound
 Pa Paper
 Ce Ceramic
 M Mica
 E Electrolytic
 Elec Electronic

Unless otherwise stated, the tolerance shown is plus and minus of the indicated value.
 Where two or more part numbers are shown, the second and third numbers, if any, are alternate parts.

RF TUNING ASSEMBLY ELECTRICAL PARTS LIST

Symbol No.	Part No.	Description
C101	03014590	Cap F Ce 470 mmfd 20% 350 V
C102	Same as C101	
C103	03014600	Cap F Ce 470 mmfd 20% 600 V
C104	03014580	Cap F Ce 15 mmfd 5% 500 V
C105	03014490	Cap V Ce 3-12 mmfd 10% NPO
C106	Same as C105	
C107	Same as C105	
C108	Same as C104	
C109	Same as C101	
C110	Same as C103	
C111	03014890	Cap V Ce 2-12 mmfd 10% 500 V
C112	03012150	Cap F C 1 mfd 20% 500 V
C113	Same as C103	
C114	03014610	Cap F Ce 5 mmfd 10% 500 V
C115	Same as C101	
C116	Same as C101	
L101	21004031	Inductor end plate assembly
L102	21004291	Inductor
(A, B & C)		
L103	21004041	Coil shunt
L104	21004051	Inductor V end oscillator
L105	21004061	Inductor end Grid assembly
L106	21004071	Coil antenna
L107	21004081	Coil bandpass coupling
R101	02030310	Res F C 200 ohms 5% 1/2 W
R102	02037890	Res F C 10,000 ohms 10% 2 W
R104	02031900	Res F C 12000 ohms 10% 1/2 W
R105	02032130	Res F C 1 megohms 10% 1/2 W
R106	02032010	Res F C 100,000 ohms 10% 1/2 W
R107	02032070	Res F C 330,000 ohms 10% 1/2 W
R108	Same as R102	
R109	Same as R104	
R110	Same as R104	
V101	25000190	Tube Elec type 6J6
V102	25000180	Tube Elec type 6AK5
V103	25000190	Tube Elec type 6J6

RECEIVER PARTS LIST RA-105

MAIN CHASSIS

C201	03014380	Cap Ce 100 mmfd 20% 500 V
C202	03015610	Cap Ce .005 mfd Min 450 V
C203	Same as C202	
C204	Same as C202	
C205	Same as C201	
C206	Same as C202	
C207	Same as C202	
C208	03013800	Cap Ce 20 mmfd ±5% Zero Temp
C209	03015220	Coef 500 V
C210	03015370	Cap Ce 10 mmfd 5% 500 V Zero Temp
C211	03015260	Coef
C212	Same as C202	
C213	03015420	Cap V Ce 1-3.5 mmfd 500 V
C214	03015580	Cap E 10/10/10 mfd +50% -10% 450 V
(A, B, C, D)		
C215	03013080	Cap Ce 10 mmfd ±10% Zero Temp
C216	03015250	Coef 500 V
C217	03012730	Cap Ce 47 mmfd Zero Temp Coef 10% 500 V
C218	03015300	500 V
C219	03014040	Cap Pa .1 mfd 25% 400 V
C220	03013910	Cap Pa .1 mfd 25% 200 V
C221	Same as C214	
C222	03011380	Cap Pa .1 mfd 25% 600 V
C223	03009650	Cap Pa .05 mfd 25% 200 V
C224	Same as C219	
C225	03015260	Cap Pa .01 mfd 25% 600 V
C226	Same as C222	
C227	03001450	Cap Pa .01 mfd 25% 400 V
C228	Same as C202	
C229	03013940	Cap Ce .001mfd Min 350 V
C230	Same as C222	
C231	Same as C222	
C232	03014570	Cap Ce 2.5 mmfd Zero Temp
C233	03015240	Coef 10% 500 V
On later models C 233 is described as follows:		
C233	03014610	Cap Ce 2.5 mmfd 10%
C234	Same as C202	
C235	03002720	Cap Ce 2.5 mmfd ±5mmfd Zero Temp
C236	03014280	Coef 20% 500 V

Symbol No.	Part No.	Description
L220	21004465	Coil video peaking
P201	50002471	Assembly cable 6 pin
P202	50002451	Assembly cable 8 pin
R201	02030700	Res F C 8.2 K ohms 5% 1/2 W
R202	02040700	Res F C 47 K ohms 10% 1/2 W
R203	02031970	Res F C 68 K ohms 10% 1/2 W
R204	02041970	Res F C 5.6 K ohms 5% 1/2 W
R205	02040660	Res F C 88 ohms 10% 1/2 W
R206	02030920	Res F C 68 K ohms 5% 1/2 W
R207	02040920	Res F C 22 K ohms 10% 2 W
R208	02037800	Same as R206
R209	02031890	Res F C 10 K ohms 10% 1/2 W
R210	02030690	Res F C 3 K ohms 5% 1/2 W
R211	02040590	Same as R204
R212	02041890	Same as R206
R213	02031700	Res F C 15 K ohms 5% 1/2 W
R214	02040760	Res F C 100 ohms 10% 1/2 W
R215	02031650	Same as R206
R216	02031550	Same as R206
R217	02032140	Res F C 1.2 megohms 10% 1/2 W
R218	02042140	Res F C 5.1 K ohms 5% 1/2 W
R219	02030650	Res F C 33 ohms 10% 1/2 W
R220	02031590	Res F C 27 K ohms 10% 2 W
R221	02037840	Res F C 27 K ohms 10% 2 W
R222	02037940	Res F C 27 K ohms 10% 2 W
R223	02030630	Res F C 4.3 K ohms 5% 1/2 W
R224	02040630	Res F C 1 K ohms 10% 1/2 W
R225	02041770	Res F C 470 K ohms 10% 1/2 W
R226	02032090	Res F C 330 mmfd 10% 500 V
R227	02042090	Cap Pa .005 mfd 25% 600 V
R228	01007280	Res V C 1 K ohms 20% 1/2 W
R229	01008220	Res F C 5.6 K ohms 10% 1/2 W
R230	02034860	Res F C 560 ohms 10% 1 W
R231	02044860	Res F C 20 K ohms 5% 1/2 W
R232	02034940	Res F C 27 K ohms 10% 1 W
R233	02034740	Res F C 20 K ohms 5% 1/2 W
R234	02041740	Res F C 4.7 K ohms 10% 2 W
R235	02030790	Res F C 27 K ohms 10% 1 W
R236	02040790	Res F C 3.9 K ohms 10% 2 W
R237	02037840	Res F C 4.7 K ohms 10% 1/2 W
R238	02031850	Res F C 270 K ohms 10% 1/2 W
R239	02041850	Res F C 1 Megohms 10% 1/2 W
R240	02042060	Res V C 100 K ohms 20% 1/2 W
R241	02032130	Res F C 220 ohms 10% 1/2 W
R242	02042130	Res F C 200 K ohms 10% 1/2 W
R243	01007350	Res F C 7.5 K ohms 5% 1/2 W
R244	02040690	Res V C 1 K ohms 10% 25 W
R245	01008730	Res F C 250 K ohms 10% 1/2 W
R246	01011700	Res F C 3390 K ohms 10% 1/2 W
R247	01017330	Res V C 250 K ohms 10% 1/2 W
R248	01007330	Res F C 220 ohms 10% 1/2 W
R249	01011700	Res F C 220 ohms 10% 1/2 W
R250	01011700	Res F C 10 ohms 10% 1/2 W
R251	02031530	Res F C 150 ohms 10% 1/2 W
R252	02037820	Res F C 47 K ohms 10% 2 W
R253	02019500	Res F C 25 ohms 10% 4 W
R254	02030720	Res F C 10 K ohms 10% 1/2 W
R255	02030720	Res F C 10 K ohms 10% 1/2 W
R256	02037800	Res F C 47 K ohms 10% 2 W
R257	02037800	Res F C 47 K ohms 10% 2 W
R258	02037800	Res F C 47 K ohms 10% 2 W
R259	02037800	Res F C 47 K ohms 10% 2 W
R260	02042110	Res F C 4.7 Megohms 10% 1/2 W
R261	02042210	Res F C 4.7 Megohms 10% 1/2 W
R262	02037880	Res F C 82 K ohms 10% 2 W
R263	02031930	Res F C 2.2 K ohms 10% 1/2 W
R264	02041930	Res F C 100 K ohms 10% 1/2 W
R265	02032010	Res F C 82 ohms 10% 1/2 W
R266	02042110	Res F C 33 K ohms 10% 1 W
R267	02044950	Same as R224
R268	02044950	Same as R224
R269	02030840	Same as R224
R270	02031760	Same as R224
R271	02041760	Same as R224
R272	02031720	Same as R224
R273	02031720	Same as R224

Symbol No.	Part No.	Description
R274	Same as R259	
R275	20003941	Transformer sweep vertical
R276	20003981	Transformer power
R277	25000010	Tube Elec type 6AG5
R278	Same as V201	
R279	01007300	Res V C 1 Megohm 25% 1/2 W
R280	01011920	Res V C 100 Kohms 25% 1/2 W SPST
R281 & R282	01007310	Res F C 88 ohms 10% 1/2 W
R283	02012560	Res F W 2.2 ohms 10% 1 W
R284	Same as R240	
R285	02037780	Res F C 270 ohms 10% 2 W
R286	02037780	Res F C 1.2 K ohms 10% 2 W
R287	02037780	Res F C 1.5 Megohms 10% 1/2 W
R288	Same as R227	
R289	02032150	Res F C 27 Kohms 10% 1/2 W
R290	02032150	Res F C 27 Kohms 10% 1/2 W
R291	02031650	Res F C 15 K ohms 5% 1/2 W
R292	02031650	Res F C 100 ohms 10% 1/2 W
R293	02031650	Res F C 27 Kohms 10% 1/2 W
R294	02031650	Res F C 27 Kohms 10% 1/2 W
R295	02041940	Res F C 27 Kohms 10% 1/2 W
R296	02041940	Res F C 5.1 K ohms 5% 1/2 W
R297	02040650	Res F C 33 ohms 10% 1/2 W
R298	02037840	Res F C 27 K ohms 10% 2 W
R299	02037840	Res F C 27 K ohms 10% 2 W
R300	02037880	Res F C 10 Kohms 10% 2 W
R301	02107960	Res F W 5 Kohms 5% 10 W
R302	02106160	Same as R218
R303	02031810	Res F C 2.2 K ohms 10% 1/2 W
R304	02041810	Res F C 470 K ohms 10% 1/2 W
R305	0	

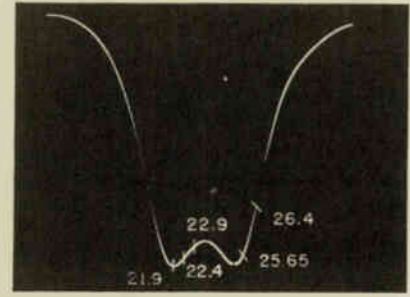


FIG. 100

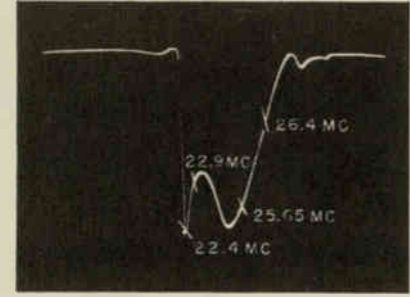


FIG. 101

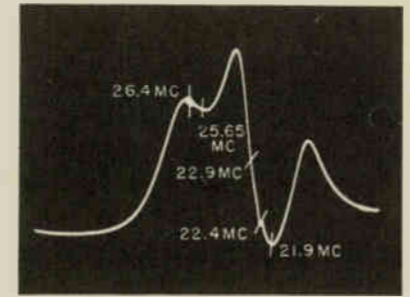


FIG. 102

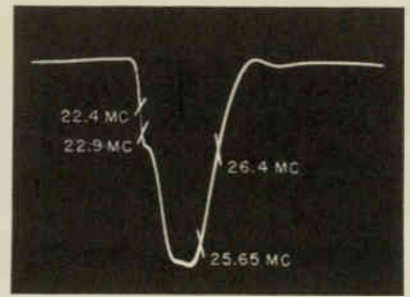


FIG. 103

VIDEO IF ALIGNMENT TABLE

Step No.	To Adjust	Type of Input Signal Required	Connect Generator Leads Across	Connect Output Leads Across	Feed Output leads directly into Oscillograph or into Oscillograph via Probe Detector	Adjust to Conform to response. Curve Shows in	Remarks
1.	C213 L211 L212	Wobb and unmodulated R.F. signal.	Pin 1 (grid) V203 and chassis	Pin 1 (grid) V205 and chassis	Direct	Fig. 100	C213 adjusts curve for double peak. L211 and L212 adjusts markers. L209 should be shorted to ground.
2.	R251 AGC						Set for 3.2V. At junction of R246 and C226.
3.	L210 Z201 (top)	Mod. signal at 21.9 mc.	Pin 1 (grid) V201 and chassis	Pin 1 (grid) V205 and chassis	Direct	None	Adjust both for minimum output.
4.	L209	Mod. signal at 27.9 mc.	Pin 1 (grid) V201 and chassis	Pin 1 (grid) V205 and chassis	Direct	None	Adjust for minimum output.
5.	L207 L208	Wobb and unmodulated R.F. signal.	Pin 1 (grid) V202 and chassis	Pin 1 (grid) V205 and chassis	Direct	Fig. 101	
6.	L204 L206	Wobb and unmodulated R.F. signal.	Pin 1 (grid) V201 and chassis	Pin 5 (plate) V202 and chassis	Probe Detector	Fig. 102	
7.	To check 1st, 2nd and 3rd Video IF stages	Wobb and unmodulated R.F. signal.	Pin 1 (grid) V201 and chassis	Pin 1 (grid) V205 and chassis	Direct	Fig. 103	If necessary readjust L204 and L206
8.	L201 L203	Wobb and unmodulated R.F. signal.	Pin 1 (grid) V201 and chassis	Pin 5 (plate) V201 and chassis	Probe Detector	Fig. 104	Grid of V202 should be grounded.
9.	Check overall Video IF stages	Wobb and unmodulated R.F. signal.	Pin 1 (grid) V102 and chassis	Pin 1 (grid) V205 and chassis	Direct	Fig. 105	If necessary readjust L206, L204.

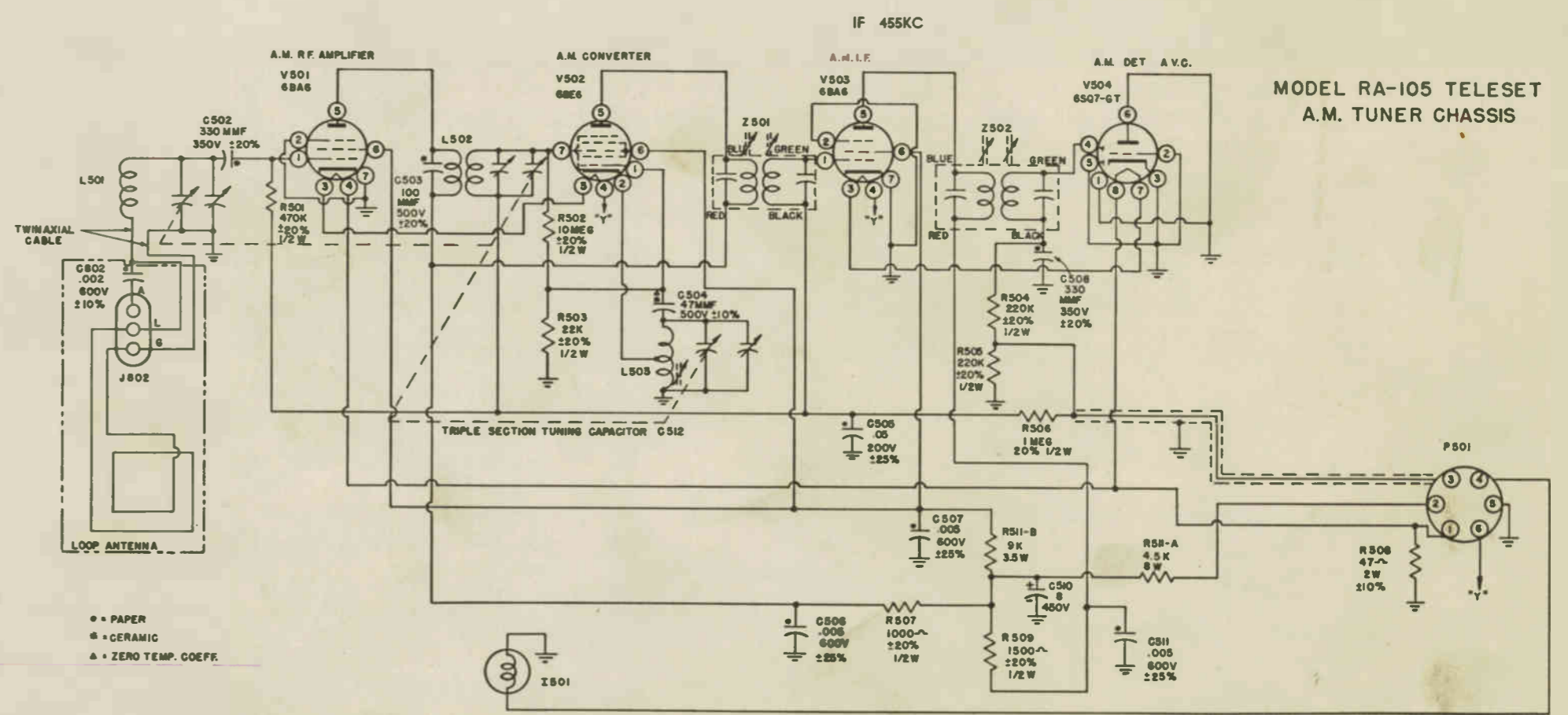
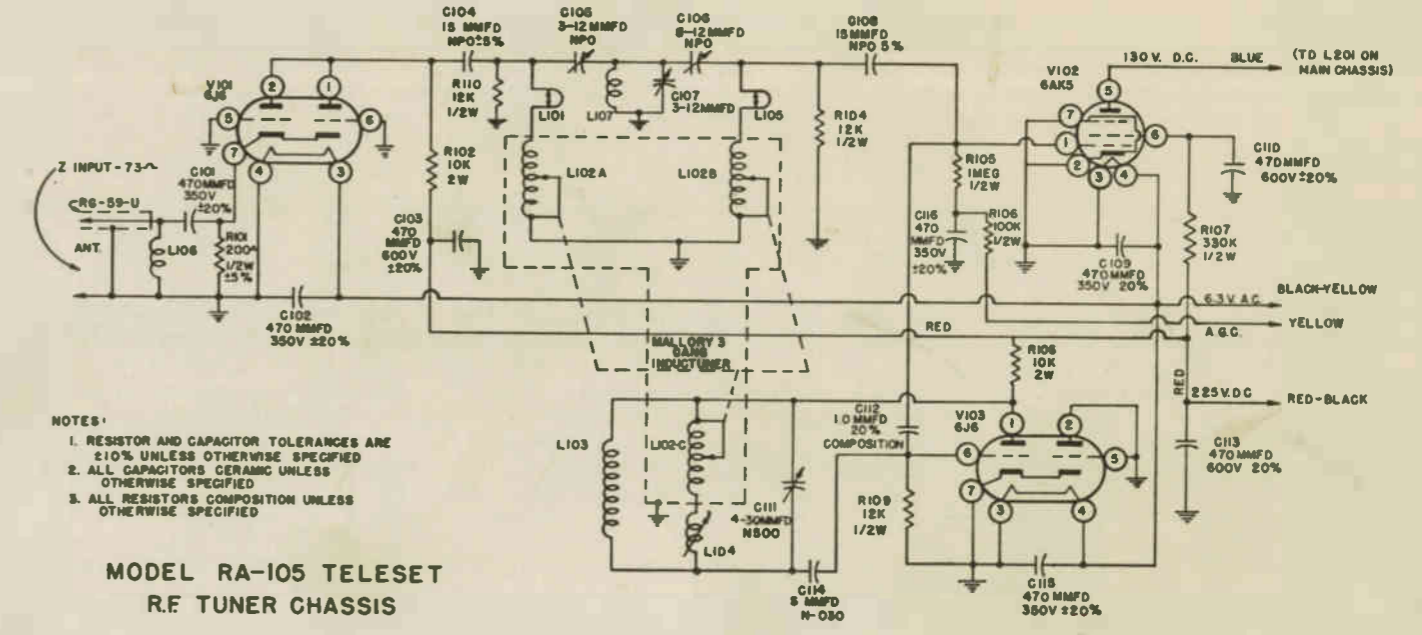
SOUND IF ALIGNMENT TABLE

1.	Z203	Wobb and unmodulated R.F. signal at 21.9 mc.	Pin 1 (grid) V211 and chassis	Pin 5 (plate) V212 and chassis	Probe Detector	Fig. 106	Adjust for a symmetrical response.
2.	Z202	Wobb and unmodulated R.F. signal at 21.9 mc.	Pin 1 (grid) V210 and chassis	Pin 5 (plate) V212 and chassis	Probe Detector	Fig. 107	Adjust for a symmetrical response.
3.	Z201 bottom coil	Wobb and unmodulated R.F. signal at 21.9 mc.	Pin 1 (grid) V201 and chassis	Pin 5 (plate) V212 and chassis	Probe Detector	Fig. 108	Adjust for a symmetrical response. (If AGC is set too high the 1st video IF tube will cut off, resulting in no signal.)
4.	Z204 top coil (sec.) bottom coil (pr.)	Wobb and unmodulated R.F. signal at 21.9 mc.	Pin 1 (grid) V201 and chassis	Junction of R274 and C250	Direct	Fig. 109	Center the 21.9 mc marker on S response curve with secondary control. Then adjust for maximum response with primary control.

GRAIN TRAP ADJUSTMENT

1.	L216	Modulated R.F. at 4.5 mc.	Pin 1 (grid) V205 and chassis	At grid, pin 2 CRT	Probe Detector		Adjust for minimum output. (Contrast control at maximum setting.)
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*Use 6AK5 adaptor. Connect hot lead of generator to the wire on Pin No. 1. After completing the alignment, be sure to properly adjust the AGC control.



TYPICAL VOLTAGE READINGS

Line 117 V
 Tuner Plugged Into Main Chassis. Station Tuned In.
 All Readings to Chassis.
 SVC Selector Switch in AM Position.
 RCA Model 195A Volt-ohm-myst used in making these measurements:

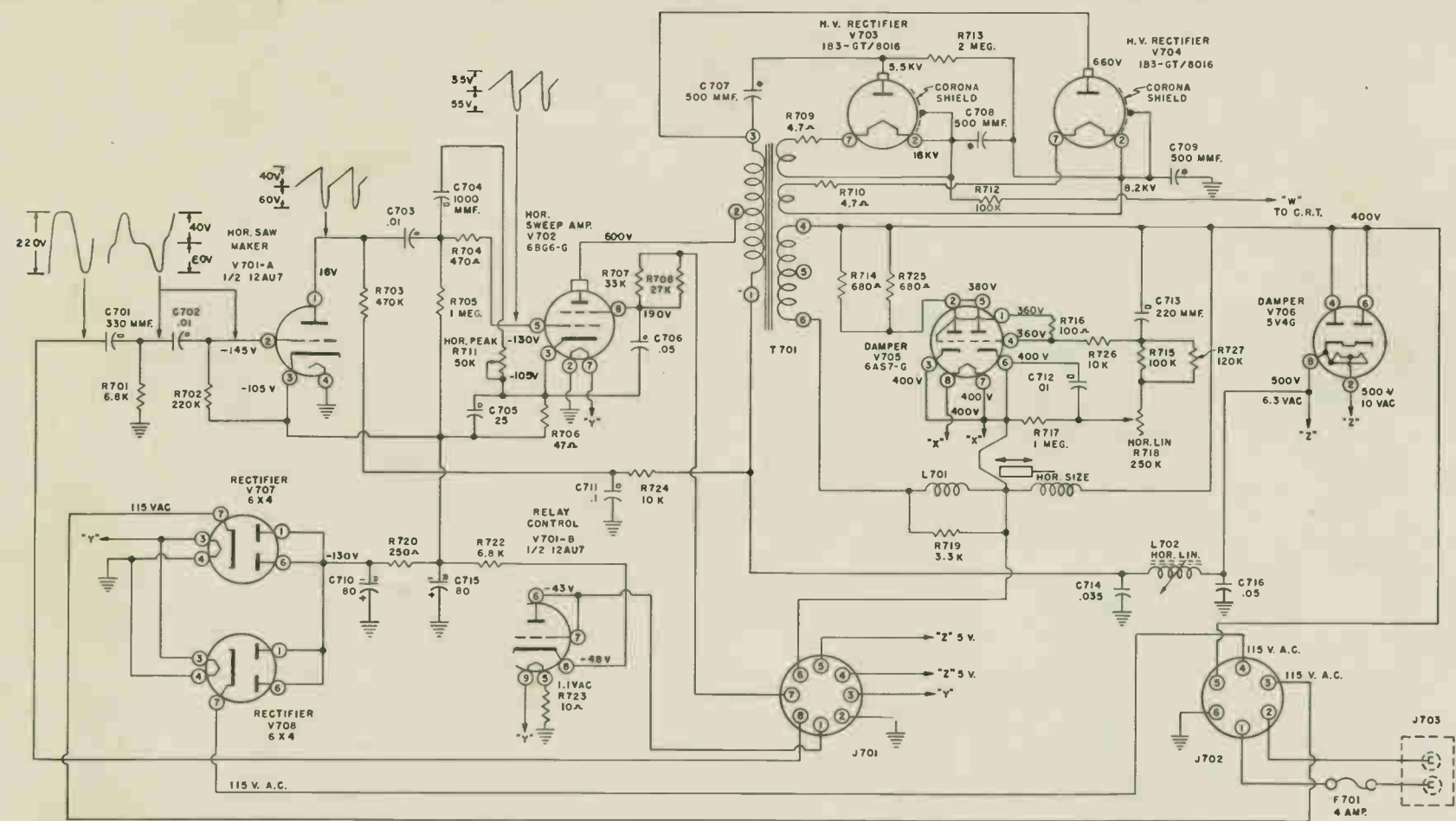
Tube	1	2	3	4	5	6	7	8
V501	-1 V	0	0	6.8 Vac	260V	110V	0	
V502	-12 V	1.5 Vac	0	6.8 Vac	255V	110V	-1.2V	
V503	-1.0 V	0	0	6.8 Vac	260V	110V	0	
V504	0	0	0	.5V	0	0	0	6.8 Vac

TYPICAL RESISTANCE READINGS

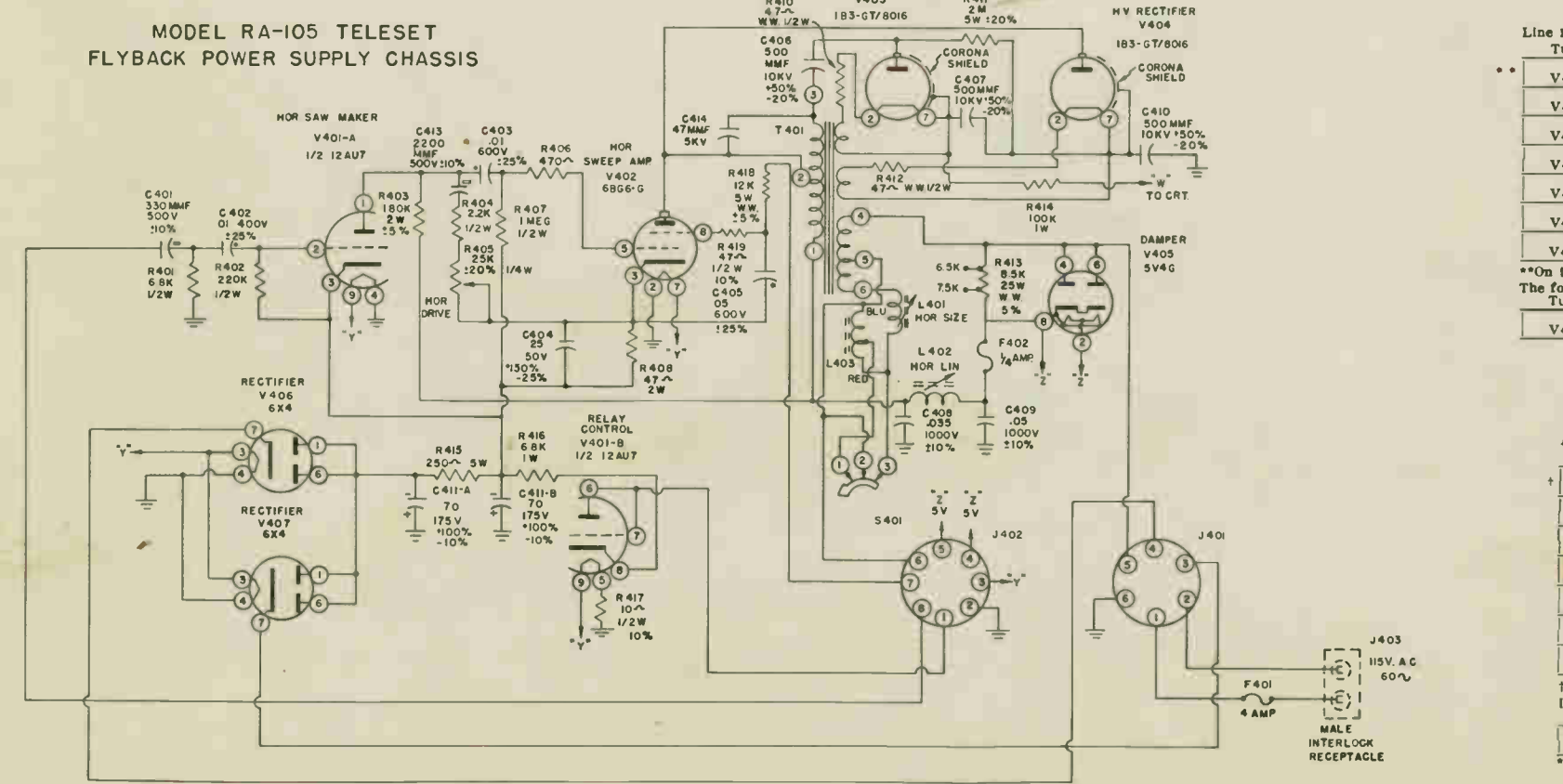
(Same conditions as for voltage measurements)
 All readings in ohms unless otherwise stated
 M=Million
 K=Thousand

Tube	1	2	3	4	5*	6*	7	8
V501	1.7M	0	1.7	0.2	42K	52K	0	
V502	22K	0.5	1.7	0.2	42K	52K	1.2M	
V503	1.2M	0	1.7	0.2	42K	52K	0	
V504	0	0	0	450K	0	0	1.3	0.2

*Readings at pins No. 5 and 6 were observed after the capacity in the circuit was charged.



MODEL RA-106 TELEASET FLYBACK POWER SUPPLY CHASSIS



MODEL RA-105 TELEASET FLYBACK POWER SUPPLY CHASSIS

RESISTANCE MEASUREMENTS — ALL READINGS TO GROUND

	1	2	3	4	5	6	7	8	9
V701	meg 1000	400K	390K	0	5.6			meg 5	.1
V702	—	0	360K	7.5K	11	19K	.1	30K	meg 1000 Cap. Pl.
V703									Cap.
V704									Cap. Pl.
V705	meg 1	15K	meg 1	15K	15K	15K	15K	15K	
V706	—			15K		15K			
V707	meg 3.4	meg 3.4	.5	0	—	meg 3.4			
V708	meg 3.4	—	.1	0	—	meg 3.4	4.6		

Note: Both voltage and resistance measurements taken with an RCA model 195A Voltomyst

Power Supply (89001001)

Abbreviations used:

Res	Resistor	F	Fixed	Ce	Ceramic
Cap	Capacitor	C	Composition	M	Mica
V	Variable	W	Wire Wound	E	Electrolytic
		Pa	Paper	Elec	Electronic

Unless otherwise stated, the tolerance shown is plus and minus of the indicated value. Where two or more part numbers are shown, the second and third numbers, if any, are alternate parts.

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
C701	03020180	Cap M 330 mmfd 10% 300V	R710	Same as R709	
C702	03001150	Cap Pa .01 mfd 25% 400V	R711	01006600	Res V C 50 K 20% 1/4 W
C703	03012560	Cap Pa .01 mfd 25% 600V	R712	02035010	Res F C 100 K 10% 1 W
C704	03029040	Cap M .001 mmfd 10% 500V	R713	02045010	Res F W 2 meg 20% 5 W
C705	08000400	Cap E 25 mfd 50V	R714	02019500	Res F C 680 10% 2 W
C706	03015370	Cap Pa .05 mfd 25% 600V	R715	02087750	Res F C 100 K 10% 2 W
C707	03014410	Cap Ce 300 mmfd 10KV	R716	02101130	Res F W 100 10% 1/4 W
C708	Same as C707		R717	02032130	Res F C 1 meg 10% 1/2 W
C709	Same as C707		R718	02042130	Res V C 250 K 20% 2 W
C710	03016180	Cap E 80 mfd 200V	R719	01007630	Res F C 3.3 K 10% 2 W
C711	03011380	Cap Pa .1 mfd 25% 600V	R720	02047930	Res F W 250 5% 5 W
C712	03033090	Cap M .01 mfd 300V	R721	02107140	Res F W 100 10% 1/4 W
C713	03020160	Cap M 220 mmfd 500V	R722	02107630	Res F C 6.8 K 10% 1 W
C714	03014080	Cap .035 mfd 1000V	R723	02031530	Res F C 10 10% 1/2 W
C715	Same as C710		R724	02031890	Res F C 10 K 10% 1/2 W
C716	03014070	Cap Pa .05 mfd 10% 1000V	R725	02018900	Same as R714
F701	11000800	Fuse Carl 4 amp 250V	R726	02034970	Same as R724
L701	21001341	Inductor Hor size	R727	02038020	Res F C 120 K 10% 2 W
L702	21001350	Inductor V 5.5 to 26 MH	T701	20001061	Trans AF hor Output
R701	02031870	Res F C 6.8 K 10% 1/2 W	T702	20004071	Trans power Filament
R702	02032050	Res F C 290 K 10% 1/2 W	V701	25000130	Tube Elec 12AU7
R703	02042050	Res F C 470 K 10% 1/2 W	V702	25000140	Tube Elec 6B6-G
R704	02031730	Res F C 470 10% 1/2 W	V703	25000130	Tube Elec 1B3 GT/8016
R705	02032130	Res F C 1 meg 10% 1/2 W	V704	25000130	Same as V703
R706	02042130	Res F C 47 10% 2 W	V705	25000290	Tube Elec 6AS7-G
R707	02037950	Res F C 33 K 10% 2 W	V706	25000160	Tube Elec 5V4-G
R708	02037940	Res F C 27 K 10% 2 W	V707	25000170	Tube Elec 6X4
R709	02100810	Res F W 4.7 40% 1/2 W	V708	Same as V707	

NOTE: Latest Models Include a 1/4 amp. fuse (Part No. 11001100) in series with L702 at junction of R724, C714 and T701.

TYPICAL VOLTAGE READINGS

Line 117V Picture adjusted for normal size. RCA Voltomyst Model 195A used. All readings to chassis.

Tube	1	2	3	4	5	6	7	8	9	Top Cap
V401	100V	-140V	-95V	0	0	-87V	-87V	-42V	6	
V402	180V	0	-85V		110V	-110V	6.3 Vac	180V		560V
V403		11KV					11KV			4.6KV
V404		4.8KV					4.6KV			560V
V405		4.80V		390V		390V		470V		
V406	-120V		Vac 6.3	0		-120V	115 Vac			
V407	-120V		Vac 6.3	0		-120V	115 Vac			

**On the early models, R402 and the cathode of V401-A are returned directly to ground. On these sets, R403 is a 220K 2W resistor. The following readings will apply only to these sets:

Tube	1	2	3	4	5	6	7	8	9	Top Cap
V401	180V	-41V	0	0	1.2 Vac	-37V	-87V	-41V	0.2 Vac	

TYPICAL RESISTANCE READINGS

All readings in ohms unless otherwise indicated. M=1 million K=1 thousand

Tube	1	2	3	4	5	6	7	8	9
V401	210K	2.5M*	2M*	0	5.5	5K	5K	800K	
V402	21K	0	2M*	6.5	3.8M*	3.8M*	.1	23K	
V403	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	
V404	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	
V405	Inf.	22K	Inf.	5K	Inf.	5.8K	Inf.	22K	
V406	3.5M*	4.5M	0.05	0	4.1M	8.5M*	4.5		
V407	3.5M*		0.05	0	500K*	8.5M*	4.5		

*On the early models, R402 and the cathode of V401-A are returned directly to ground. On these sets, R403 is a 220K 2W resistor. The following readings will apply only to these sets.

Tube	1	2	3	4	5	6	7	8	9
V401	220K	220K	0	0	5.5	5K	5K	800K*	0.05

*Readings were observed after the capacity in the circuit was charged.

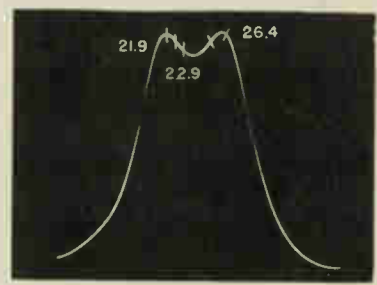


FIG. 104

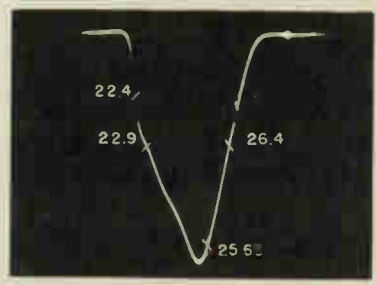


FIG. 105

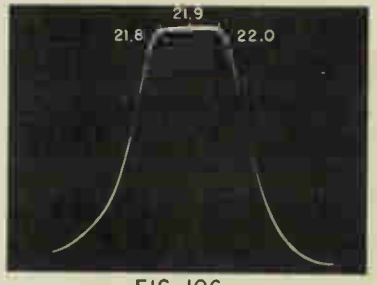


FIG. 106

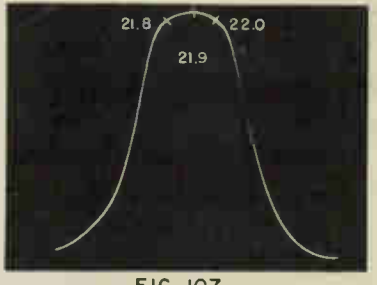


FIG. 107



FIG. 108

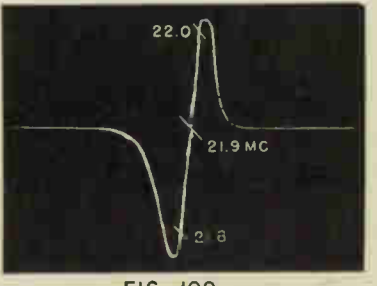
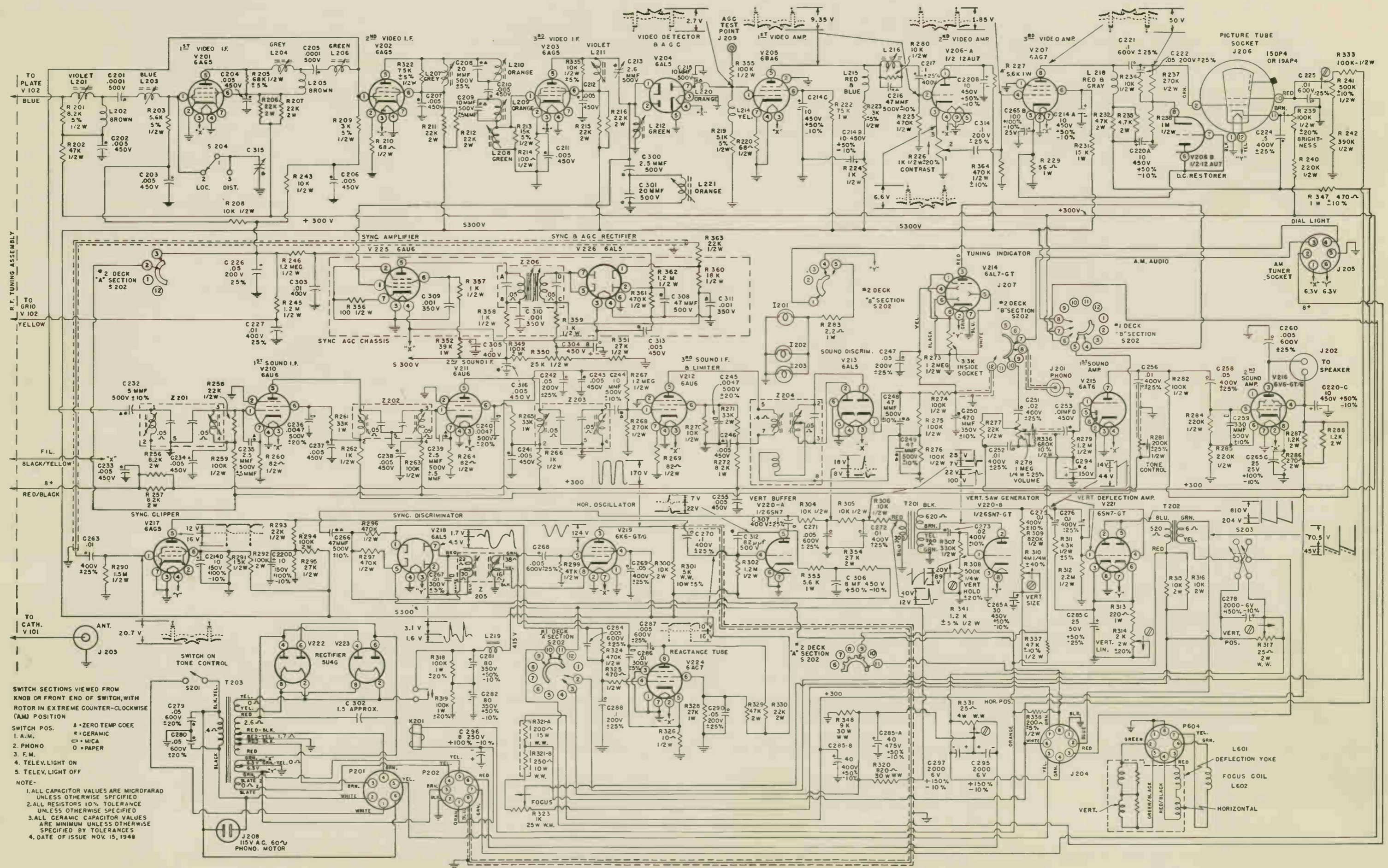


FIG. 109



SWITCH SECTIONS VIEWED FROM KNOB OR FRONT END OF SWITCH, WITH ROTOR IN EXTREME COUNTER-CLOCKWISE (AM) POSITION

SWITCH POS.	Symbol	Material
1. A.M.	Δ	ZERO TEMP COEF. CERAMIC
2. PHONO	○	MICA
3. F.M.	○	PAPER
4. TELEV. LIGHT ON	○	
5. TELEV. LIGHT OFF	○	

NOTE -

1. ALL CAPACITOR VALUES ARE MICROFARAD UNLESS OTHERWISE SPECIFIED
2. ALL RESISTORS 10% TOLERANCE UNLESS OTHERWISE SPECIFIED
3. ALL CERAMIC CAPACITOR VALUES ARE MINIMUM UNLESS OTHERWISE SPECIFIED BY TOLERANCES
4. DATE OF ISSUE NOV. 15, 1948

RA-105B — RA-108A MAIN CHASSIS PARTS LIST

Abbreviations used: C Composition, Cap Capacitor, E Electrolytic, Elec F, Pa, Res, Wire Wound, Electronic Fixed Paper Resistor

Unless otherwise stated, the tolerance shown is plus and minus of the indicated value. Where two or more part numbers are shown, the second and third numbers, if any, are alternate parts.

Table with columns: Symbol No., Part No., Description. Lists various electronic components like capacitors, resistors, and cables.

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Table with columns: Symbol No., Part No., Description. Lists various electronic components like capacitors, resistors, and cables.

RF ASSEMBLY Bottom Coupled Inputuner Parts List

RA-105B and RA-108A

Table with columns: Symbol No., Part No., Description. Lists RF assembly parts like inputuner and dial assemblies.

MISCELLANEOUS PARTS LIST

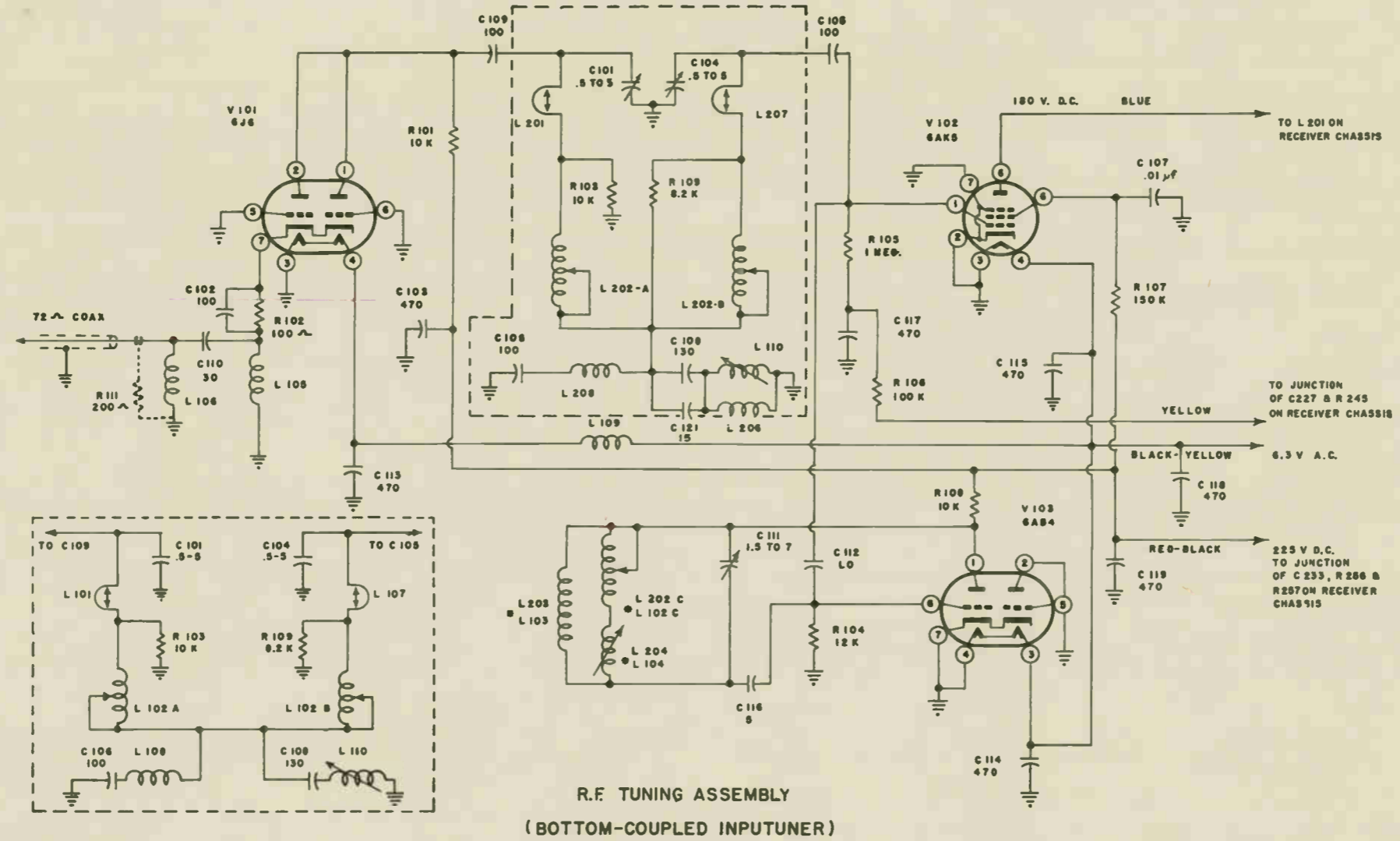
Sussex RA-105B

Table with columns: Part Number, Description. Lists miscellaneous parts like transformer, tube, and switch.

PARTS USED IN EARLY BRADFORD MODELS WHICH DIFFER FROM ABOVE LIST

Table with columns: Symbol No., Part No., Description. Lists parts used in early Bradford models.

Inputuner 31000601 can be distinguished from Inputuner 89002802 by entry of the antenna inside rear of chassis.



RESISTANCE MEASUREMENTS—ALL READINGS TO GROUND (RA-105B and RA-108A Main Chassis)

Tube	1	2	3	4	5	6	7	8
V201	2M	0	.05	0	18K	12K	0	
V202	2M	60	.05	0	12K	16K	60	
V203	.1	100	.05	0	18K	10K	100	
V204	.05	Ne	0	.05	0	Ne	5.5K	
V205	5.5K	0	.05	0	10K	90K	65	
V206	12K	500K	1K	.05	.05	50	55	1M
V207	0	0	Ne	500K	55	20K	.05	6.7K
*V209	0	1.5M	Ne	Ne	Ne	Ne	Ne	Ne
V210	1.6M	0	.05	0	7.2K	45K	82	
V211	1.6M	0	.05	0	7.2K	45K	82	
V212	270K	0	.1	0	21K	8.8K	98	
V213	210K	110K	.05	0	0	0	110K	
V214	2.6K	.05	6.1K	1.6M	0	0	0	2.6K
V215	1.2M	0	0	.05	Ne	Ne	110K	
V216	0	.05	7.2K	7K	500K	225K	0	270
V217	1.6M	0	0	.05	50K	15K	0	
V218	1M	600K	.05	0	50K	Ne	600K	
V219	0	0	11.5K	18K	50K	600K	.05	20
V220	440K	1.5M	0	1.3M	40K	0	0	.05
V221	2.2M	11.5K	0-2.2K	2.2M	11.5K	0-2.2K	.05	0
V222	Ne	Inf.	Ne	5	Ne	6.5	Ne	Inf.
V223	Ne	Inf.	Ne	5	Ne	6.5	Ne	Inf.
V224	0	.05	0	1.4M	10	19K	0	31K
V225	0.1	0	0	0.1	5.4K	46K	100	
V226	50K	540K	0.1	0	20K	0	20K	

*V209
 † Depends upon setting of R-241
 ‡ Depends upon setting of vertical linearity control (1K is typical)

RESISTANCE READINGS OF COILS

(All readings in ohms)
 All coil readings shown were taken with coils disconnected.

Symbol	Reading
L201	0.8
L202	0.1
L203	0.8
L204	0.8
L205	0.1
L206	0.1
L207	0.8
L208	0.1
L209	0.1
L210	0.1
L211	0.8
L212	0.1
L214	8.8
L215	5.0
L216	1.0
L218	5.0
L219	80
L220	1.2
L221	0.1

VOLTAGE MEASUREMENTS—ALL READINGS TO GROUND (RA-105B and RA-108A Main Chassis)

Tube	1	2	3	4	5	6	7	8	9
V201	-.77	0	6.3AC	0	117	0			
V202	-.77	.55	6.3AC	0	160	160	.65		
V203	0	1.2	6.3AC	0	185	185	1.2		
V204	0	Ne	0	6.3AC	0	Ne	-.45		
V205	-.45	0	6.3AC	0	240	90	.55		
V206	223	0	6.3	6.3AC	6.3AC	2.7	2.7	39	0
V207	0	0	Ne	.2	2.7	170	6.3AC	240	Ne
*V209	0	16	Ne	Ne	Ne	Ne	Ne	Ne	Ne
V210	-.25	0	6.3AC	0	350	160	.55		
V211	-.25	0	6.3AC	0	350	160	.55		
V212	-.47	0	6.3AC	0	212	42	.18		
V213	0	0	6.3AC	0	0	0	0		
V214	1.2	6.3AC	268	-.15	0	0	0	1.2	Ne
V215	-1.5	0	0	6.3AC	Ne	Ne	145		
V216	Ne	6.3AC	222	225	-.4	.17	0	11.3	
V217	.92	0	0	6.3AC	24	17	0		
V218	-.82	-.55	6.3AC	0	-1.6	Ne	-.55		
V219	0	0	165	190	-41	0	6.3AC	0.3	
V220	-.35	190	0	1.3	55	0	0	6.3AC	
V221	-.1	223	10.3	-.1	253	10.5	6.3AC	0	
V222	Ne	400	Ne	445AC	Ne	445AC	Ne	400	Ne
V223	Ne	400	Ne	445AC	Ne	445AC	Ne	400	Ne
V224	0	6.3AC	0	-1.1	0	72	0	150	
V225	0	0	0	6.3AC	275	153	1.25		
V226	64	64	6.3AC	0	52-96	0	52-96		

All readings in volts.
 * V209
 † 10 11 12
 ‡ 247 6.3AC 6.3AC

POWER SUPPLY PARTS LIST RA-105B

RA-105B POWER SUPPLY RESISTANCE MEASUREMENTS

POWER SUPPLY PARTS LIST RA-108A

All Readings to Ground

Table with 10 columns: Tube, 1, 2, 3, 4, 5, 6, 7, 8, 9, Cap. Rows include V401, V402, V403, V404, V406, V407.

Note: All cables disconnected.

RA-108A POWER SUPPLY RESISTANCE MEASUREMENTS

All Readings to Ground

Table with 10 columns: Tube, 1, 2, 3, 4, 5, 6, 7, 8, 9. Rows include V701, V702, V703, V704, V705, V706, V707, V708.

Note: All cables disconnected.

Instrument Used—EQA Model 195-A Volt-ohmyst (for voltage and resistance) All readings in ohms K = thousand m = million

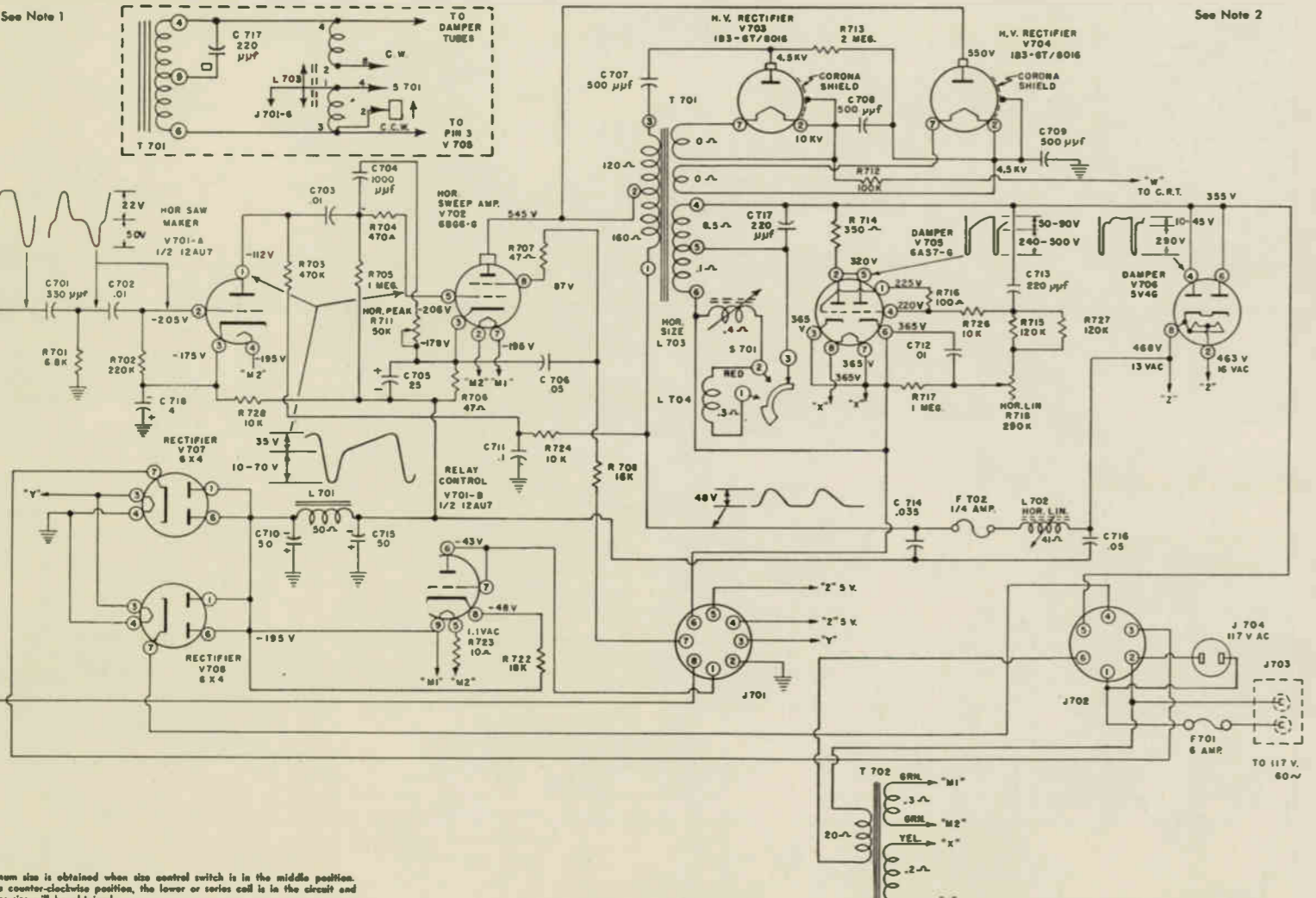
Abbreviations used: Composition, E Elec, Electrolytic, Pa Res, Paper, unless otherwise stated, the tolerance shown is plus and minus of the indicated value.

Part list for RA-105B with columns: Symbol No., Part No., Description, Symbol No., Part No., Description.

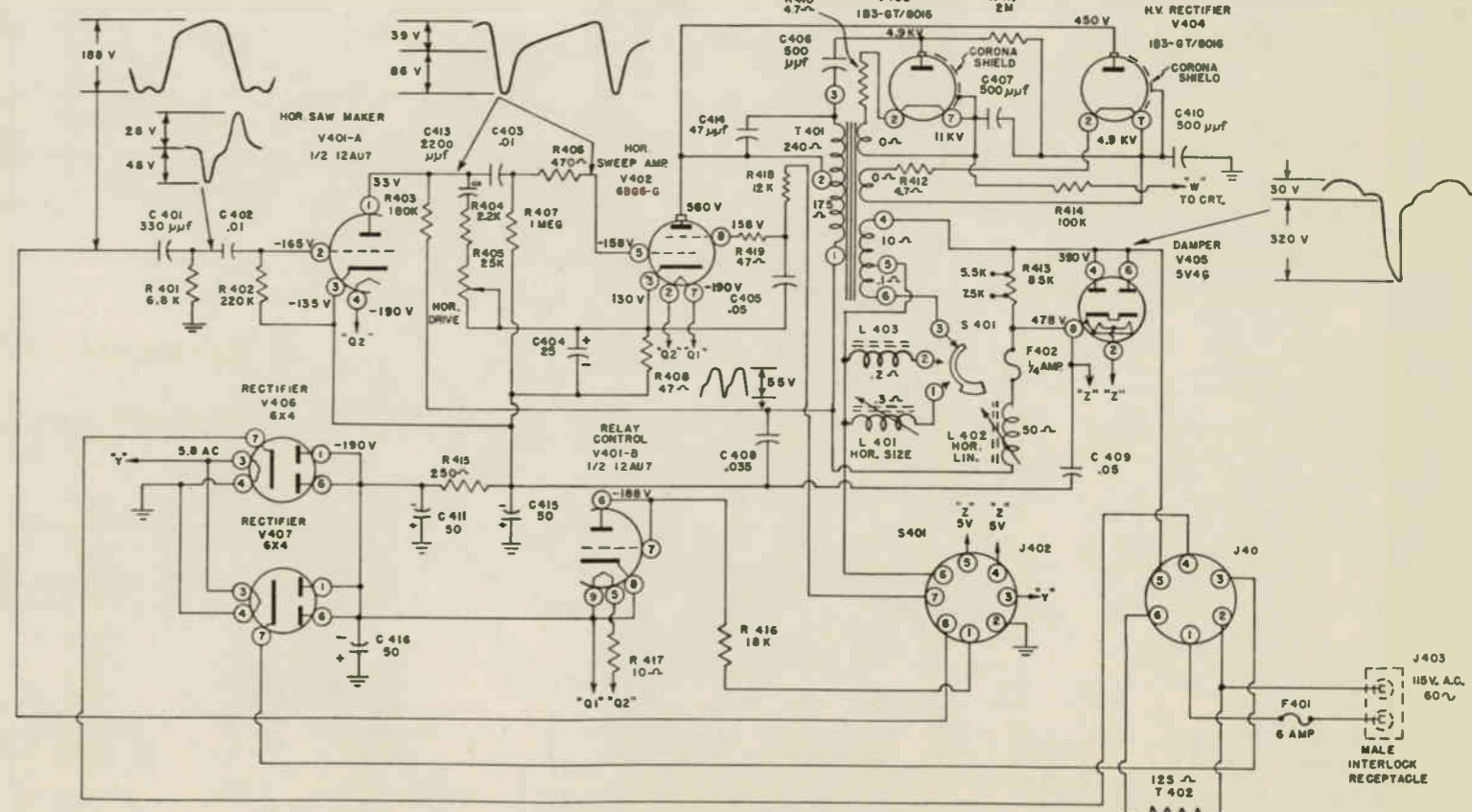
Abbreviations used: Composition, E Elec, Electrolytic, Pa Res, Paper, unless otherwise stated, the tolerance shown is plus and minus of the indicated value.

Part list for RA-108A with columns: Symbol No., Part No., Description, Symbol No., Part No., Description.

Late Model Sets: L703, S701



MODEL RA-108-A TELESET FLYBACK POWER SUPPLY CHASSIS



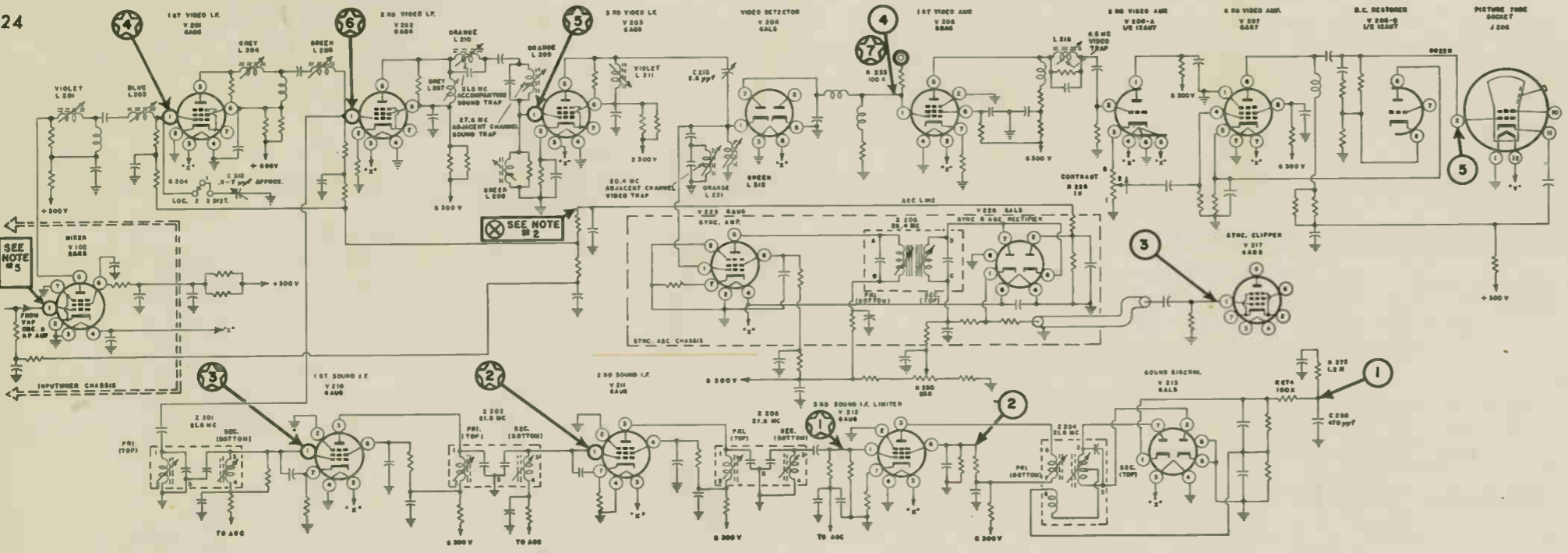
MODEL RA-105-B TELESET FLYBACK POWER SUPPLY CHASSIS

Note 1: Maximum size is obtained when size control switch is in the middle position. In the counter-clockwise position, the lower or series coil is in the circuit and smaller size will be obtained.

Note 2: The upper portion of the waveforms in the plate circuits of V705 and V706 are subject to variation between sets.

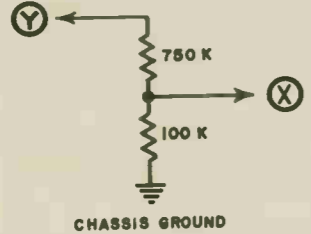
Note: The upper portion of the waveforms shown for the plate circuit of V405 is subject to variations between sets.

RA-105B, 108A

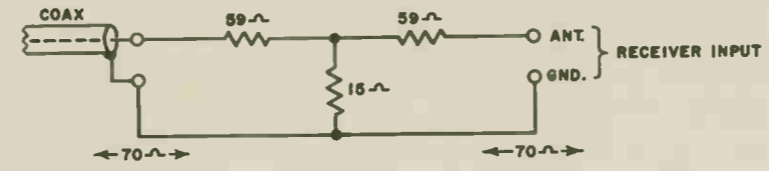


ALIGNMENT NOTES

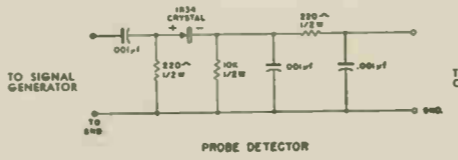
- Du Mont Telesets are designed for TV and high-fidelity FM reception. Full bandpass characteristic in sound I.F. system is required so that full dynamic range of FM may be obtained.
- During Video I.F. alignment fixed bias MUST be applied to the tubes operating with AGC. This bias is obtained by removing V226 (6AL5 sync-AGC rectifier) and applying -5 volts to the junction of C303 and R246 (point X in photograph). A convenient method of obtaining this fixed bias voltage is shown below.
- Undesired indentations in response curve may be caused by stages ahead of those being aligned. The removal of tubes in these stages will sometimes aid in obtaining correct curves. L212 affects left side of curve, L210 right side, and C21 affects band-width.
- If 26.4 mc marker position is not as shown and cannot be obtained by varying L207 and L208; L209 (27.9 mc trap) may be adjusted slightly to place marker in proper position. Slugs will be nearly all the way out. L208 positions center peak, L207 affects shoulder amplitude.
- To perform step 14, a 6AK5 adapter as shown below is required to replace V102.



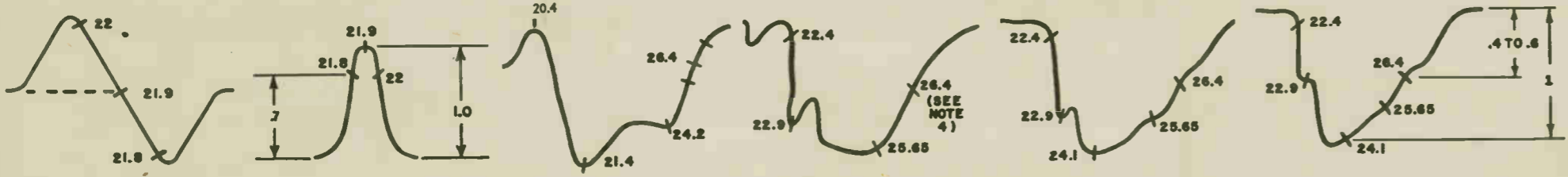
6. When aligning RA-105B and RA-108A Telesets which incorporate a "local-distance" switch, place the switch in the "local" position, set C315 at about one-half maximum capacitance, and proceed with the normal alignment procedure as outlined above. After the receiver has been aligned, remove -5 volts fixed bias, place switch in "distance" position and tune in a weak test pattern. Turn down brightness control until picture is barely visible. Peak L201 and L203 for maximum picture signal. Now, place switch in "local" position, tune in normally strong signal and adjust C315 for best picture quality. If smear or trailing blacks are present in strong signal picture and cannot be removed by adjusting C315, L206 may be slightly readjusted to eliminate this condition. A weak signal may be simulated by the use of a resistance-pad attenuator connected in series with the transmission line and the receiver antenna terminal. An attenuator circuit is shown below.



7. In the procedure, reference is made to the use of a "Probe Detector." This device is merely a crystal rectifier with the necessary filter.



8. V201, 202 and 203 are 6BC5's in late production sets. For maximum gain in fringe areas, we recommend the use of the 6BC5.



STEP 2 STEP 3 STEP 11 STEP 12 STEP 13 STEP 14

ALIGNMENT TABLE

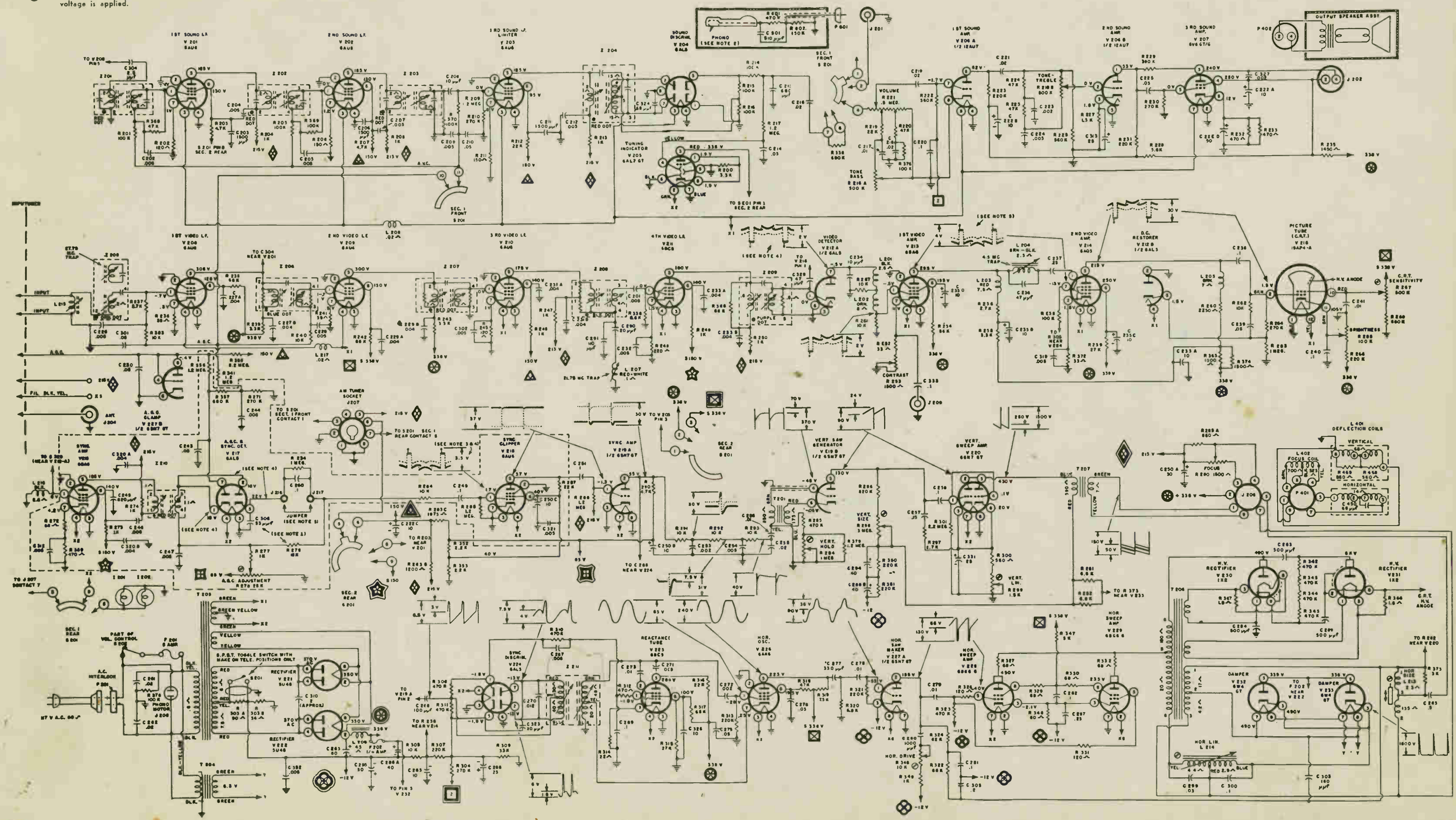
Note: Remove 6AB4 Oscillator V-103 and 6J6 RF Amplifier V101 From Tuner Before Attempting to Align Set

Step No.	Connect Sweep and Marker in Series with 100 mmf Condenser to:	Marker Frequencies (mc)	Sweep Generator Center Frequency (megacycles)	Connect Oscillograph to:	Adjust:	Remarks:
SOUND DISCRIMINATOR ALIGNMENT						
1	Pin #1 V212	21.9 400 cycles AM	Not Used	Junction R274 - R273 - C250	Z204 Top (secondary)	Adjust for minimum 400 cycles indication. Correct adjustment will be critical and should approach a straight line on oscillograph.
2	Same as Above	21.9 21.8 22.0 No modulation	21.9 1 mc. deviation	Same as Above	Z204 Bottom (primary)	Adjust for symmetrical response each side of 21.9 mc position. 21.8 mc and 22.0 mc markers must be as indicated or at peaks of curve. RECHECK STEP 1 to make certain Z204 secondary is correctly adjusted. (See note #1)
SOUND I. F. ALIGNMENT						
3	Pin #1 V211	21.9 21.8 22.0 No modulation	21.9 1 mc deviation	Pin #6 V212	Z203 Top and Bottom	21.9 mc marker MUST be centered on curve; 21.8 and 22.0 mc markers must not be at a position less than .7 maximum amplitude.
4	Pin #1 V210	Same as Above	Same as Above	Same as Above	Z202 Top and Bottom	Same as above. However, if flat top portion of curve is not easily obtained, adjust for 21.9 mc marker to be centered and readjust top Z203 for maximum flat top on curve.
5	Pin #1 V201	Same as Above	Same as Above	Same as Above	Z201 Bottom (secondary)	Same as Above. DO NOT READJUST Z203.
SYNC-A.G.C. AMPLIFIER AND I.F. TRAP ALIGNMENT						
6	Same as Above	26.4 400 cycles AM	Not Used	Pin #1 V217	Z206 Top and Bottom (on sub-chassis)	Bottom adjustment through hole in main chassis. Adjust for MAXIMUM 400 cycle indication.
7	Same as Above	21.9 400 cycles AM	Not Used	Pin #1 V205	Z201 Top	Adjust for MINIMUM 400 cycle indication.
8	Same as Above	Same as Above	Not Used	Same as Above	L210	Same as Above
9	Same as Above	20.4 400 cycles AM	Not Used	Same as Above	L221	Same as Above
10	Same as Above	27.9 400 cycles AM	Not Used	Same as Above	L209	Same as Above
VIDEO I.F. ALIGNMENT						
11	Pin #1 V203	21.4 22.2 26.4 No modulation	24 mc 6 - 8 mc deviation	Pin #1 V205	L212, L211 and C213	(See note #2) Short circuit L209. Adjust for typical response curve. Curves may vary slightly in individual sets. (See note #3)
12	Pin #1 V202	22.4 22.9 25.65 26.4 No modulation	Same as Above	Same as Above	L207 and L208	Remove short circuit from L209. Adjust for typical response curve
13	Pin #1 V201	22.4 22.9 24.1 25.65 26.4 No modulation	Same as Above	Same as Above	L204 and L206	Adjust for typical response curve
14	Pin #1 V102 (See note #5)	Same as Above	Same as Above	Same as Above	L201 and L203	Local-Distance switch in "local" position. C315 screw about 1/2 way in. Adjust for typical response curve. THIS IS THE OVERALL VIDEO I.F. RESPONSE AND SHOULD CLOSELY RESEMBLE TYPICAL CURVE SHOWN. (See note #6)
4.5 MC "GRAIN" TRAP ALIGNMENT						
15	Pin #1 V205	4.5 mc 400 cycles AM	Not Used	CRT Grid (green lead) through probe detector.	L216	Adjust for MINIMUM 400 cycle indication.
16	See phase correction procedure on other side.					

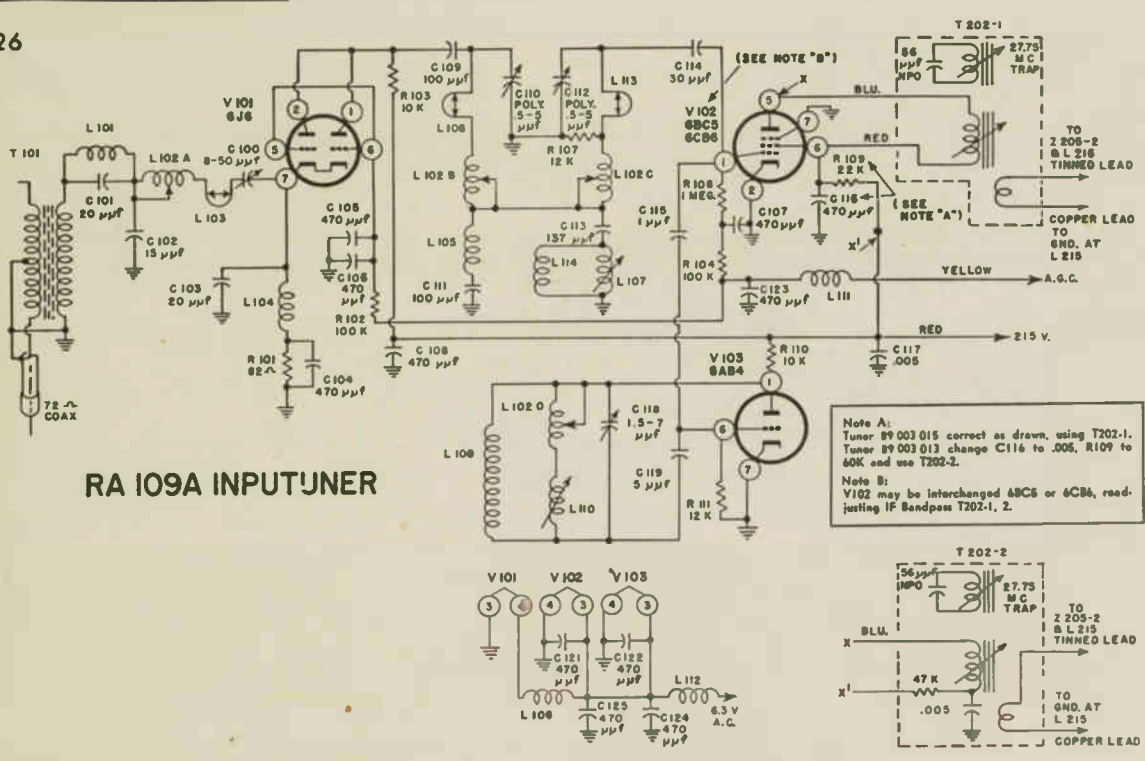
USE OF SYMBOLS

Large encircled symbol indicates source of voltage.

Small unencircled symbol indicates point to which voltage is applied.



AM TUNER PARTS LIST Sherbrooke RA-109A



RA 109A INPUT TUNER

Table listing parts for the AM Tuner, including symbols, part numbers, descriptions, and values for various components like capacitors and inductors.

RF TUNING ASSEMBLY PARTS LIST

Table listing parts for the RF Tuning Assembly, including symbols, part numbers, descriptions, and values for various components like capacitors, inductors, and tubes.

Table listing parts for the Winslow, Hanover and Westbury II tuner, including symbols, part numbers, descriptions, and values for various components like tubes, capacitors, and inductors.

Table listing parts for the Winslow, Hanover, Westbury II, and Sherbrooke tuner, including symbols, part numbers, descriptions, and values for various components like tubes, capacitors, and inductors.

Large table listing parts for the Winslow, Hanover, Westbury II, and Sherbrooke tuner, including symbols, part numbers, descriptions, and values for various components like tubes, capacitors, and inductors.

RESISTANCE MEASUREMENTS — ALL READINGS TO GROUND
RA-109A CHASSIS

TUBE	1	2	3	4	5	6	7	8
V201	1.7M	0	.1	0	7.4K	10K	120	
V202	1.7M	0	.1	0	7.4K	10K	150	
V203	2.0K	0	.1	0	7.4K	28K	150	
V204	0	100K	.1	0	200K	0	100K	
V205	33K	.1	7.5K	1.5M	0	0	0	3.3K
V206	150K	850K	1.5K	0	260K	850K	0	
V207	0	0	9K	8.5K	210K	.1	235	
V208	1.5M	0	0	.05	11K	75K	39	
V209	1.5M	0	0	.05	11K	75K	39	
V210	.7	0	0	.05	9K	6.5K	120	
V211	6.8K	0	0	.05	8K	6.3K	280	
V212	.5	0	0	.05	1M	0	5.2K	
V213	5.2K	0	0	.05	12.5K	70K	35—1.5K	
V214	110K	33	.05	0	10.5K	35K	110K	
V215	0	1.8M						
V216	2.6	0	0	.1	7.3K	6.4K	588	
V217	1K—8K	1K—8K	0	.1	20K—87K	0	1M	
V218	1.2M	0	0	.1	24.2K	2.2K	0	
V219	1.2M	8.4K	0	470K—1M	1.2M—5.5M	175	.06	0
V220	2.2M	430K	560—2.1K	2.2M	430K	560—2.1K	.06	0
V221	7.5K	7.5K	64	64			7.5K	
V222	7.5K	7.5K	64	64			7.5K	
V224	1M	500K	0	.05	33K	0	500K	
V225	1.5M	22	0	.05	33K	20K	22	
V226	220K	0	.05	0	15K	55K	20	
V227	220K	550K	66	1.8M	1.8M	0	0	.05
V228	0	140	500K	500K	500K	.05	12.5K	
V229	.05	140	12.5K	500K	500K	0	12.5K	
V230	INF.	INF.	INF.	INF.	INF.	INF.	INF.	
V231	INF.	INF.	INF.	INF.	INF.	INF.	INF.	
V232					7.4K	450K	450K	
V233					7.4K	450K	450K	

Cap. *V228 450K *V229 450K †V230 450K ‡V231 450K

Selector switch in "Television Light On" position.
Instrument Used — RCA Model WV97A Volt Ohmyst (for voltage and resistance)
All readings in ohms K = thousand M = million
Two readings for a given point indicate an adjustable resistance is in the measured circuit.

NOTES

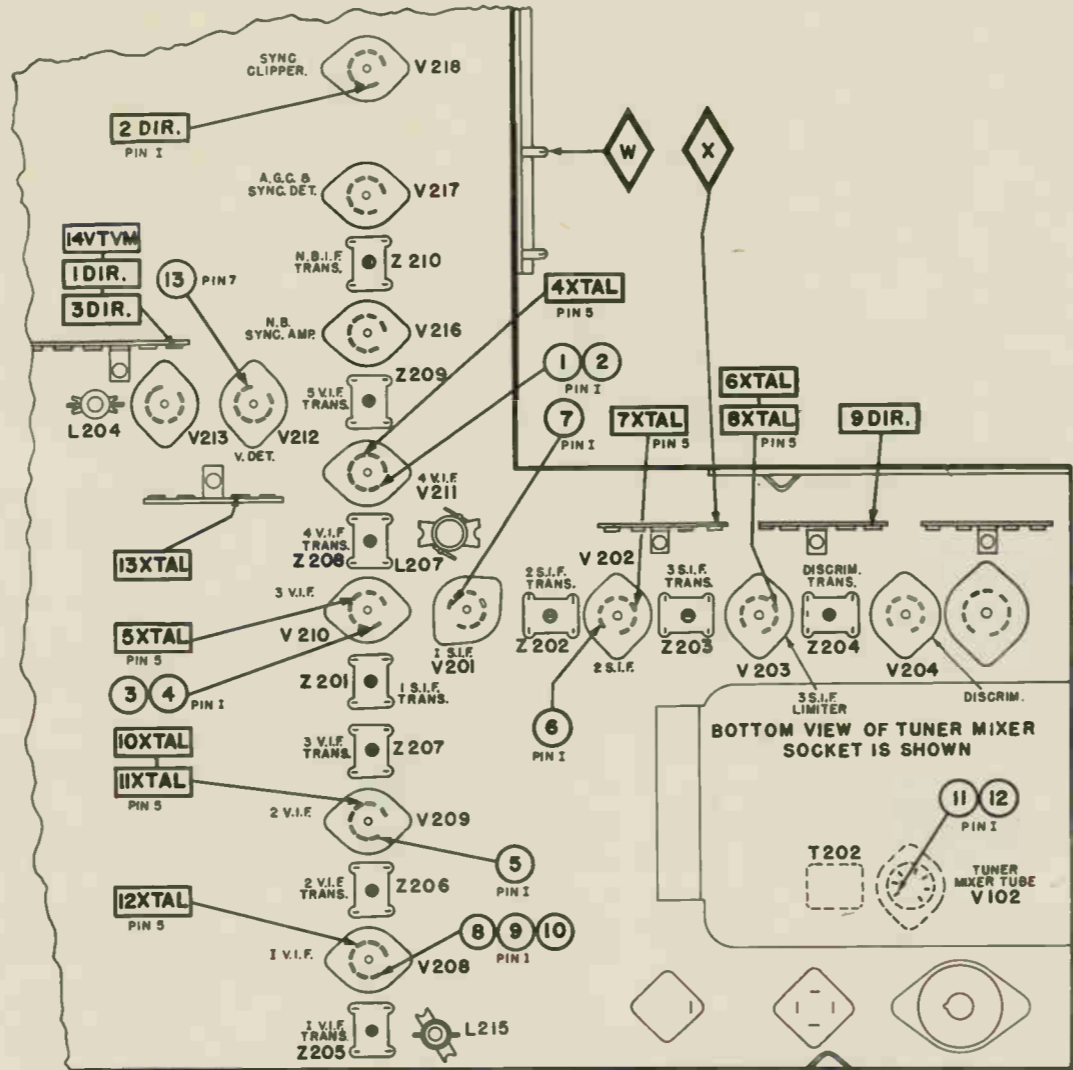
- Value of C306, R275 correct when Z210 is 20 005 251. Value of C306-20 mmf, R275-27K when Z210 is 20 006 231.
- Compensating network used only with Webster type cartridge.
- Removal of jumper eliminates horizontal pull and improves horizontal sync stability. Adding jumper improves sync noise immunity. Jumper consists of 3" piece of #12 solid wire. Amplitude of waveform at grid of V218 will change when jumper is added or removed.
- Amplitude of waveforms and voltages is affected by setting of a-g-c pot. R278.
- Amplitude of waveform depends on setting of contrast control R253.
- Voltage, resistance and waveform measurements
 - Instrument used RCA WV-97A Volt Ohmyst (for voltage and resistance). Variations of ±20 are not abnormal.
 - Voltage measurements taken to ground, no signal input.
 - Voltage measurements made with switch in TV position, lights on.
 - All coils readings taken with coils disconnected.
- Switch sections viewed from front end of switch. Rotor in extreme CCW (AM) position. Switch positions: 1. AM 2. Phono. 3 FM 4. TV, light on; 5. TV, light off. Switch has variable stop to include or exclude AM position.

TYPICAL RESISTANCE READINGS

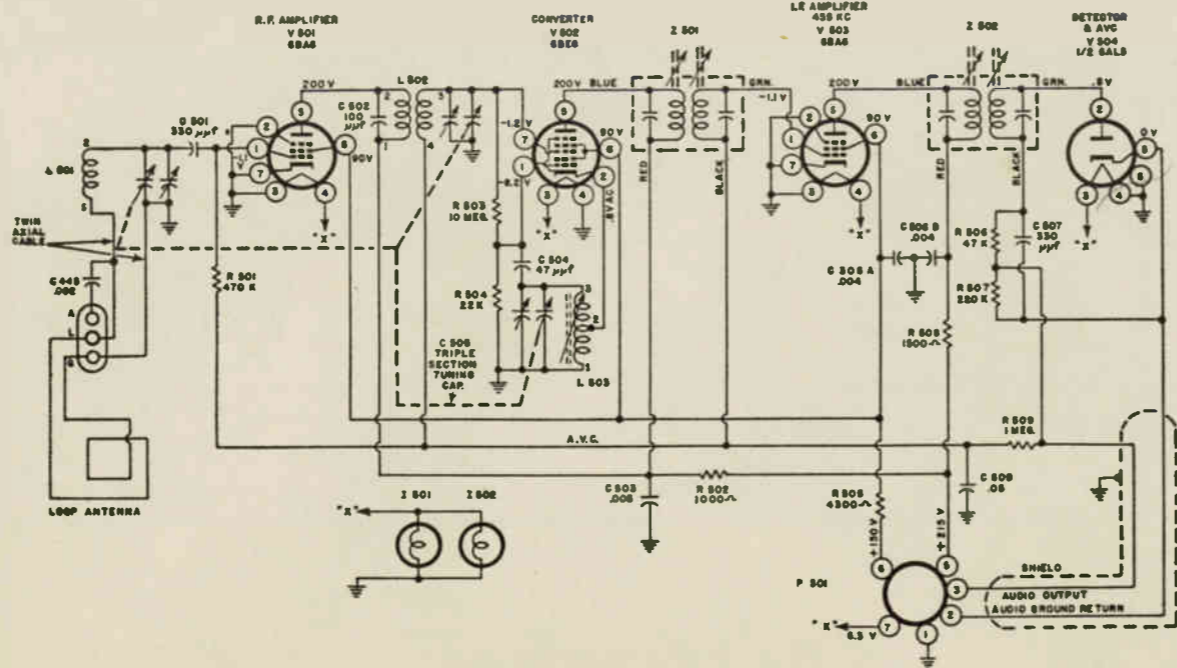
Tuner plugged into main chassis
Service Selector switch in AM position
RCA Model WV97A Volt Ohmyst used in making these measurements
All readings in ohms unless otherwise stated.
M = Million K = Thousand

Tube	1	2	3	4	5	6	7
V501	1.5M	0	0	0.1	8K*	10.5K*	0
V502	22K	0.6	0.1	0	8K*	10.5K*	1.0M
V503	1.0M	0	0	0.1	8.5K*	10.5K*	0
V504	0	350K	0.1	0	0	0	0

*Readings at pins No. 5 and 6 were observed after the capacity in the circuit was charged.



RA-109A AM TUNER



ALIGNMENT TABLE — RA-109A — RA-116A — RA-119A — RA-133A

Remove the following tubes: Tuner Oscillator V103 (6AB4), Audio Amplifier V207 (6V6GT — Disregard for RA-116A) and Horizontal Oscillator V226 (6AK6). Remove F202 Deflection Amplifier Protection Fuse. Adjust AGC control (R278) fully counter-clockwise. Turn Selector Switch in TV position.

Step	Signal Generator		Oscillograph	Adjust	Waveform	Remarks
	Frequency	Connect To				
1	24 mc. center frequency 10 mc. deviation	Pin 1-V211 4th V.I.F. Amp. (1)	Junction of L301 L302 and R257 (1DIR.)	Z208—Top and bottom slugs and bandpass cap.		Use two alignment tools simultaneously. Push bandpass cap. wire in to increase bandpass and pull out to decrease.
2	28 mc. center frequency 5 mc. deviation	As above (2)	Pin 1-V218 1st Sync Clipper (2DIR.)	Z210—Top and bottom slugs		Remove V218. Use 6AU6 with pin 3 clipped and lead tied to pin 1 for scope connection.
3	21.75 mc. 400 cps AM No Sweep	Pin 1-V210 3rd V.I.F. Amp. (3)	Junction of L301 L302 and R257 (3DIR.)	L207	Minimum scope indication.	Use high generator output and high scope gain. Be careful to avoid overload.
4	24 mc. center frequency 10 mc. deviation	As above (4)	Pin 5-V211 4th V.I.F. Amp. (4XTAL)	Z208—Top and bottom slugs		L207 adjustment affects waveform's low frequency side.
5	As above (5)	Pin 1-V209 2nd V.I.F. Amp. (5XTAL)	Pin 5-V210 3rd V.I.F. Amp. (5XTAL)	Z207—Top and bottom slugs and bandpass cap.		As above
6	22 mc. center frequency 2 mc. deviation	Pin 1-V202 2nd S.I.F. Amp. (6)	Pin 5-V203 3rd S.I.F. Limiter (6XTAL)	Z203—Top and bottom slugs		Selector Switch in FM position.
7	As above (7)	Pin 1-V201 1st S.I.F. Amp. (7XTAL)	Pin 5-V202 2nd S.I.F. Amp. (7XTAL)	Z202—Top and bottom slugs	As above	As above
8	As above (8)	Pin 1-V208 1st V.I.F. Amp. (8XTAL)	Pin 5-V203 3rd S.I.F. Limiter (8XTAL)	Z201—Top and bottom slugs		Connect 100K pot between "W" and ground, arm to "X". Adjust for -5 volts bias.
9	As above (9)	As above (9)	Junction of R214 and C215 (9DIR.)	Z204—Top slug for waveform, bottom slug for maximum amplitude.		As above
10	24 mc. center frequency 10 mc. deviation (10)	As above (10)	Pin 5-V209 2nd V.I.F. Amp. (10XTAL)	Z206—Top and bottom slugs and bandpass cap. Z201—Top slug		Selector Switch in TV position. Z201 top slug affects the 21.75 mc. dip.
11	27.75 mc. 400 cps AM No Sweep (11)	Pin 1-V102 Mixer (11XTAL)	As above (11XTAL)	Z205 and T202—Top slugs	Minimum scope indication.	Use V102 with lead tied to pin 1 for signal injection. Adjust T202 with special alignment tool #89 000 230.
12	24 mc. center frequency 10 mc. deviation (12)	As above (12)	Pin 5-V208 1st V.I.F. Amp. (12XTAL)	Z205 and T202—bottom slugs and L215		As above. L215 affects bandpass. Set below serial #0220978 do not have L215. An adjustable loop in T202 controls bandpass.
13	4.5 mc. 400 cps AM (13)	Pin 7-V212 Video Detector (13XTAL)	Junction of R234 R236 and R238 (13XTAL)	L204	Minimum scope indication.	Frequency must be accurate. Use crystal oscillator or crystal calibrated signal.
14	TV Station transmitting test pattern.	Connect a VTVM to the junction of L301, L302 and R257 (14VTVM)	As above (14VTVM)	R278 AGC control for a 3 volt DC reading.	As above	Adjust R278 on strongest station to prevent overload.
15	As above	As above	As above	Z205 bottom slug, 1 turn. Z208 bottom slug 1/2 turn. Z208 top slug, 1/2 turn. Z208 top slug, 1/2 turn.	As above	To correct for smear in the picture. To correct for ringing in the picture.

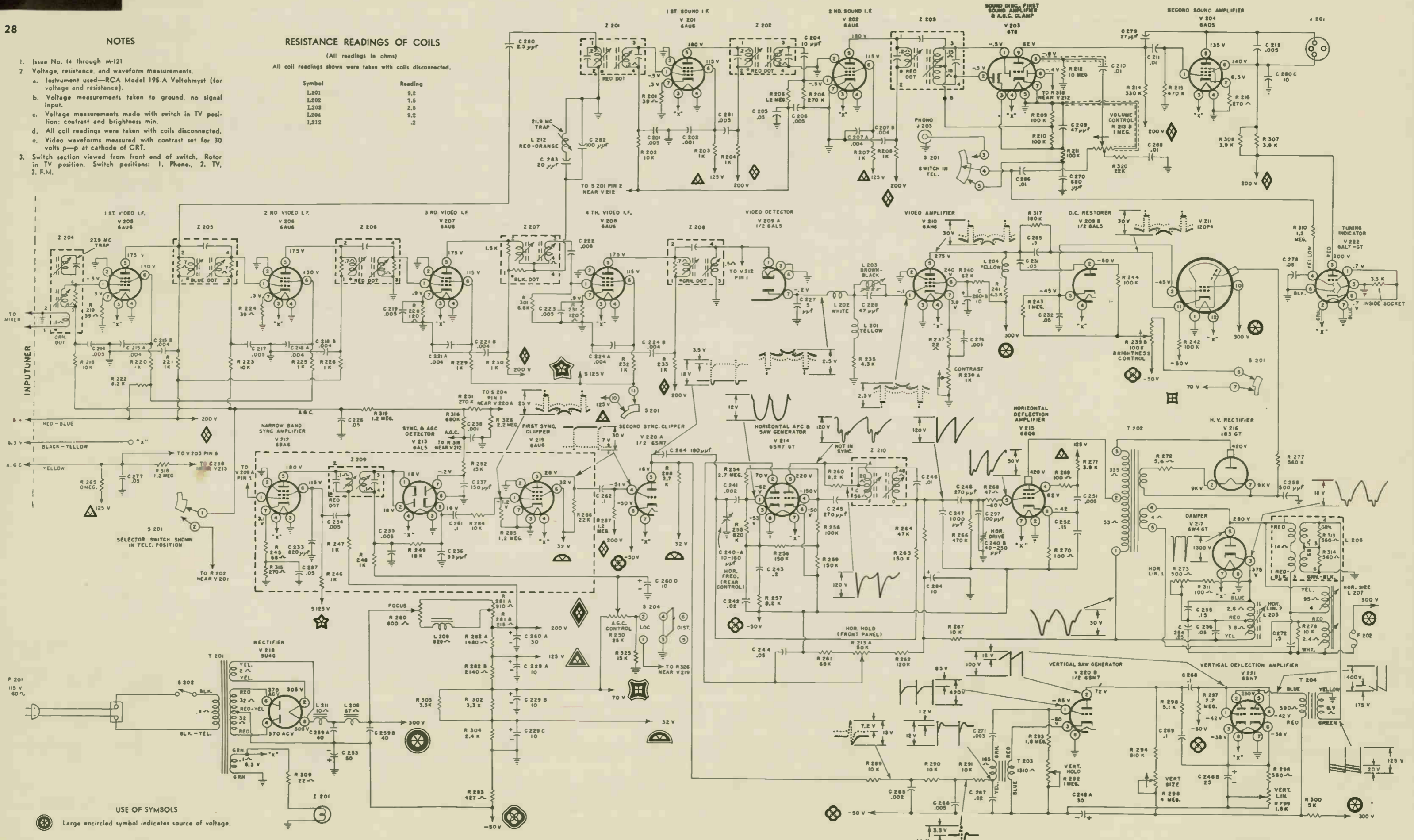
NOTES

1. Issue No. 14 through M-121
2. Voltage, resistance, and waveform measurements.
 - a. Instrument used—RCA Model 195-A Volt-hmyst (for voltage and resistance).
 - b. Voltage measurements taken to ground, no signal input.
 - c. Voltage measurements made with switch in TV position; contrast and brightness min.
 - d. All coil readings were taken with coils disconnected.
 - e. Video waveforms measured with contrast set for 30 volts p-p at cathode of CRT.
3. Switch section viewed from front end of switch. Rotor in TV position. Switch positions: 1. Phono, 2. TV, 3. F.M.

RESISTANCE READINGS OF COILS

(All readings in ohms)
All coil readings shown were taken with coils disconnected.

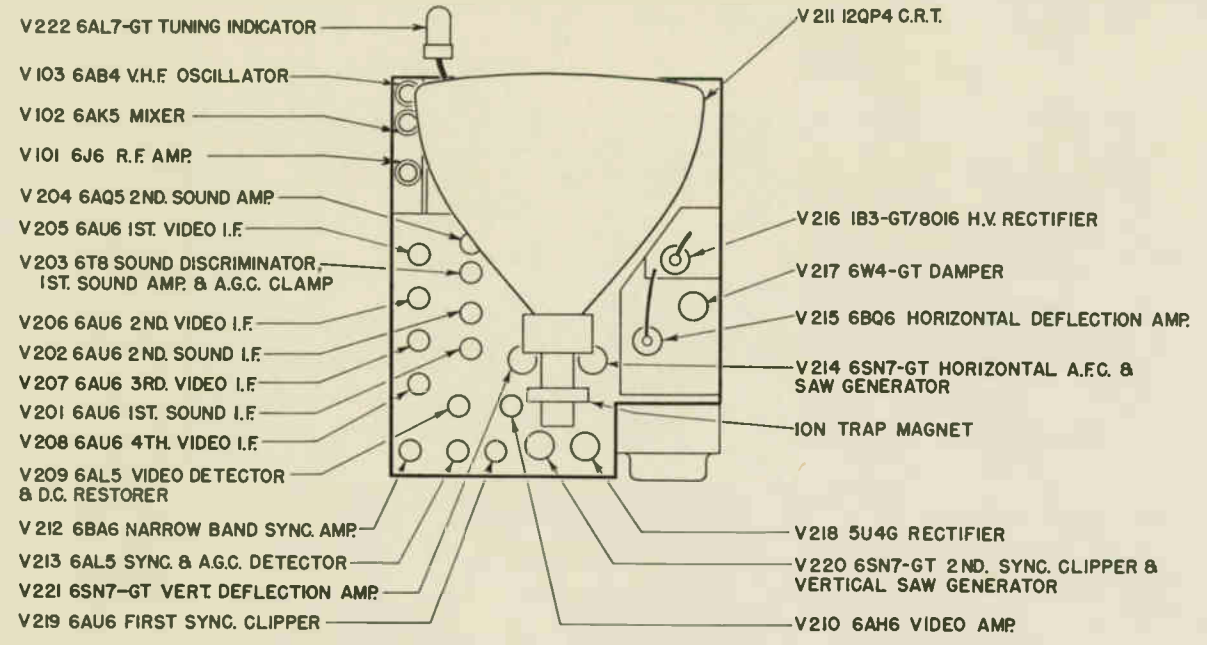
Symbol	Reading
L201	9.2
L202	7.5
L203	2.5
L204	9.2
L212	.2



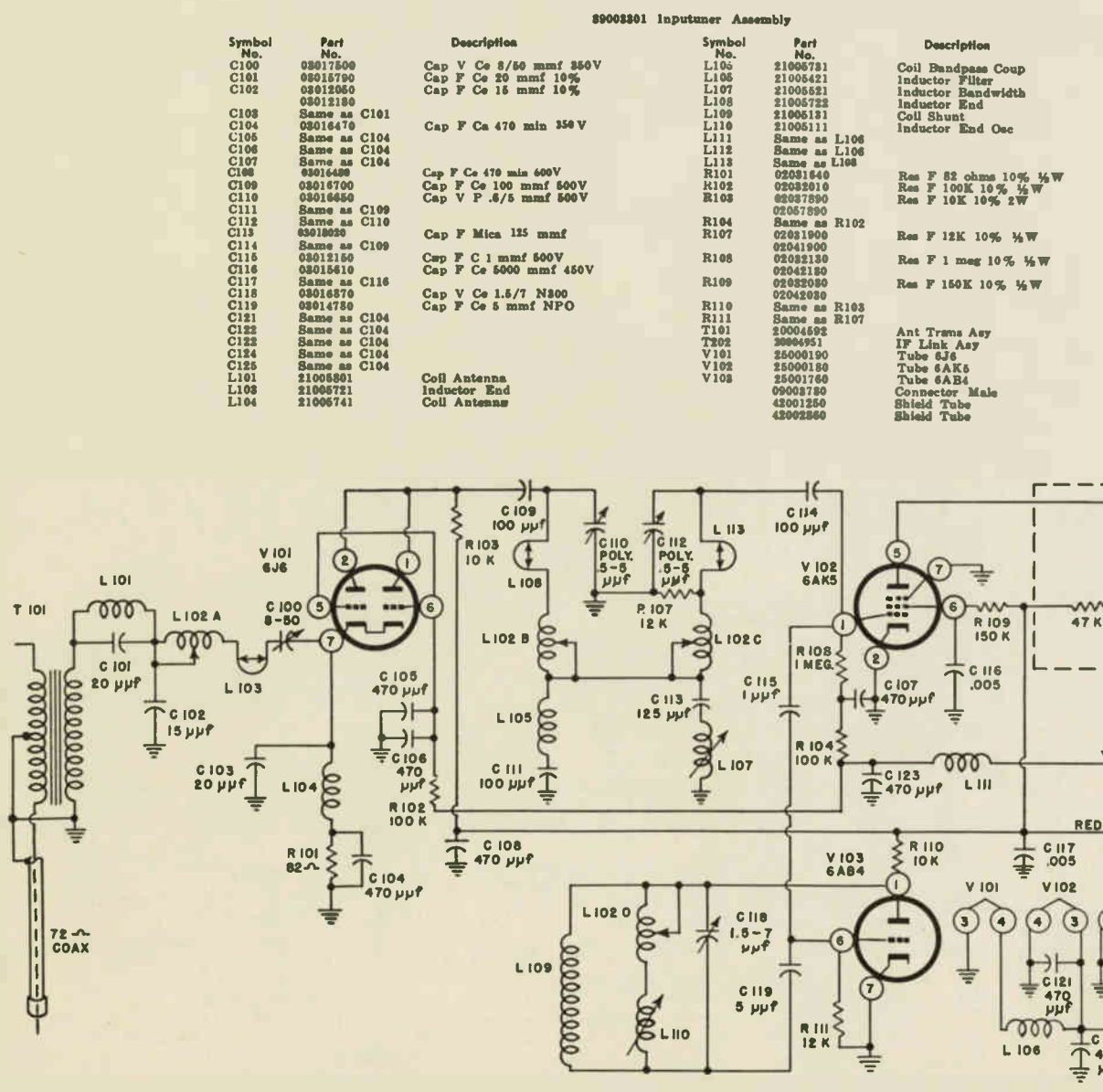
USE OF SYMBOLS

- Large circled symbol indicates source of voltage.
- Small unencircled symbol indicates point to which voltage is applied.

TUBE LOCATION RA-111A



RF TUNING ASSEMBLY PARTS LIST



RESISTANCE MEASUREMENTS — ALL READINGS TO GROUND

Table with columns for Tube No., 1, 2, 3, 4, 5, 6, 7, 8. Rows list tube types and their resistance values to ground. Example: V201 1.6M, V202 270K, V203 100K, V204 470K, V205 1.6M, V206 1.6M, V207 .5, V208 6.8K, V209 .5, V210 4.7K, *V211 0, V212 .5, V213 7.2K, V214 1M, †V215 N.C., **V216 N.C., V217 N.C., V218 N.C., V219 1.2M, V220 1.8M-2.8M, V221 2.8M, V222 3.8K. Summary row: *V203 9 350K, *V211 10 8.2K, 11 70K, 12 Fil., **V216 265K, †V215 265K.

Selector switch in 'Television' position. Instrument Used — RCA Model 195-A Voltchymyst (for voltage and resistance). All readings in ohms K= thousand M= million Two readings for a given point indicate an adjustable resistance is in the measured circuit.

MISCELLANEOUS PARTS LIST

Putnam and Guilford Telesets RA-111A

Table with columns: Symbol No., Part No., Description. Lists various components like connectors, knobs, washers, and springs. Example: 09002790 Connector Male 1 Contact, 45001371 Knob Dial Main (mahogany), 45001801 Knob Control (mahogany), 45001411 Knob Control (mahogany), 45001811 Knob Focus (mahogany), 45001451 Knob Vernier Dial (mahogany), 50002900 Cable Assy Power, 35008821 Plate Interlock, 38002711 Bumper Rubber, 39012391 Springs, 62000603 Washer Felt, 62000604 Washer Felt, 45001802 Knob Control (blonde), 45001812 Knob Focus (blonde), 45001372 Knob Dial Tuning (blonde), 45001451 Knob Vernier Dial (blonde), 45001413 Knob Control (blonde), 36000610 Clip Assembly, 45001854 Window, Safety Glass, 32000782 Front Panel (Blonde), 32000781 Front Panel (mahogany), 45001603 Knob Service Selector (mahogany), 35008871 Bracket Tuning Eye.

Putnam Only

Table with columns: Symbol No., Part No., Description. Lists miscellaneous parts specific to Putnam. Example: 18003041 Loud Speaker Assy, 32000781 Panel Back, 45001852 Window Safety Glass (mahogany).

Guilford Only

Table with columns: Symbol No., Part No., Description. Lists miscellaneous parts specific to Guilford. Example: 15003061 Loud Speaker Assy, 32000781 Panel Back, 45001851 Window Safety Glass (mahogany).

RECEIVER PARTS LIST RA-111 A

Abbreviations used: C Cap, Coil, Ce Capacitor, Co Ceramic, E Elec, F Fixed, Pa Paper, R Resistor, W Wire Wound. Unless otherwise stated, the tolerance shown is plus and minus of the indicated value. Where two or more part numbers are shown, the second and third numbers, if any, are alternate parts.

Large table listing receiver parts with columns: Symbol No., Part No., Description, Symbol No., Part No., Description, Symbol No., Part No., Description, Symbol No., Part No., Description. Lists components like resistors, capacitors, lamps, and transformers. Example: C201 09015610 Cap Ce 5000 mmf min, C202 08033180 Cap M 1000 mmf 5% 500V, C203 03020000 Cap M 10 mmf 10% 300V, C204 03009970 Cap Pa .05 mf 25% 200V, C205 08100030 Same as C201, C206 03017790 Cap M 47 mmf 10% 500V, C207 03020000 Cap M 47 mmf 10% 500V, C208 03001450 Cap Pa .01 mf 25% 400V, C209 08100090 Same as C201, C210 03012550 Cap M 47 mmf 10% 500V, C211 03100320 Cap Pa .01 mf 25% 500V, C212 03001570 Cap Pa .005 mf 25% 600V, C213 03100400 Same as C201, C214 03017790 Same as C201, C215 03020000 Same as C207, C216 03017790 Same as C201, C217 03020000 Same as C207, C218 03017790 Same as C201, C219 03020000 Same as C207, C220 03017790 Same as C201, C221 03020000 Same as C207, C222 03017790 Same as C201, C223 03020000 Same as C207, C224 03017790 Same as C201, C225 03020000 Same as C207, C226 03017790 Same as C201, C227 03020000 Same as C207, C228 03017790 Same as C201, C229 03020000 Same as C207, C230 03017790 Same as C201, C231 03020000 Same as C207, C232 03017790 Same as C201, C233 03020000 Same as C207, C234 03017790 Same as C201, C235 03020000 Same as C207, C236 03017790 Same as C201, C237 03020000 Same as C207, C238 03017790 Same as C201, C239 03020000 Same as C207, C240 03017790 Same as C201, C241 03020000 Same as C207, C242 03017790 Same as C201, C243 03020000 Same as C207, C244 03017790 Same as C201, C245 03020000 Same as C207, C246 03017790 Same as C201, C247 03020000 Same as C207, C248 03017790 Same as C201, C249 03020000 Same as C207, C250 03017790 Same as C201, C251 03020000 Same as C207, C252 03017790 Same as C201, C253 03020000 Same as C207, C254 03017790 Same as C201, C255 03020000 Same as C207, C256 03017790 Same as C201, C257 03020000 Same as C207, C258 03017790 Same as C201, C259 03020000 Same as C207, C260 03017790 Same as C201, C261 03020000 Same as C207, C262 03017790 Same as C201, C263 03020000 Same as C207, C264 03017790 Same as C201, C265 03020000 Same as C207, C266 03017790 Same as C201, C267 03020000 Same as C207, C268 03017790 Same as C201, C269 03020000 Same as C207, C270 03017790 Same as C201, C271 03020000 Same as C207, C272 03017790 Same as C201, C273 03020000 Same as C207, C274 03017790 Same as C201, C275 03020000 Same as C207, C276 03017790 Same as C201, C277 03020000 Same as C207, C278 03017790 Same as C201, C279 03020000 Same as C207, C280 03017790 Same as C201, C281 03020000 Same as C207, C282 03017790 Same as C201, C283 03020000 Same as C207, C284 03017790 Same as C201, C285 03020000 Same as C207, C286 03017790 Same as C201, C287 03020000 Same as C207, C288 03017790 Same as C201.

MAIN CHASSIS NOTES

- Schematic shown is for tuner 89003915. Tuner 89003913 connections are the same except for the rotor of C301 which is grounded and the tuner output lead which connects to the junction of C301 and Z204-3.
- Changes in schematic for RA-113 when used with an A.M. tuner.
 - Remove C279.
 - Remove jumper across R323.
 - C288 is changed to a .02 mfd 200V condenser; part number 03018470.
 - The value of R296 is 4.7K for the RA-112 chassis and 5.1K for the RA-113.
 - The value of C501 is 68 mfd for the RA-112 chassis and 51 mfd for the RA-113.
- V210 is a 6AC7 for the RA-112 chassis and a 6AH6 for the RA-113.

USE OF SYMBOLS

- Large encircled symbol indicates source of voltage.
- Small unencircled symbol indicates point to which voltage is applied.

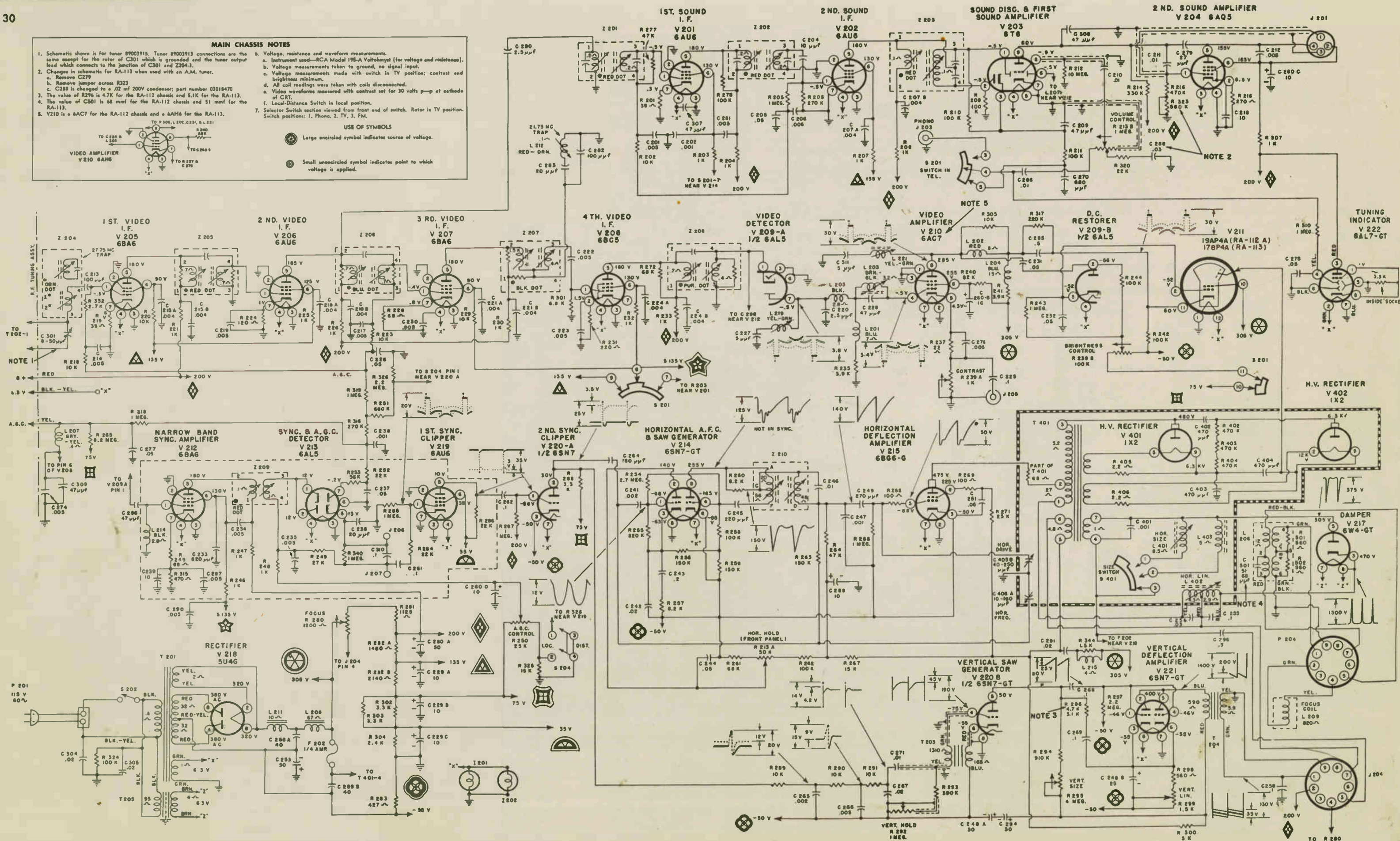
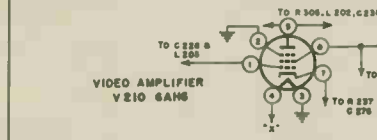


Table of parts and descriptions for RA-112, 113. Columns include Symbol No., Part No., Description, and various part numbers (R206, R207, etc.).

Table of parts and descriptions for BROOKVILLE, REVERE, BURLINGAME AND TARRYTOWN - RA-113. Columns include Symbol No., Part No., Description, and various part numbers (R296, R297, etc.).

RESISTANCE MEASUREMENTS. ALL READINGS TO GROUND. Table with columns for Tube, 1, 2, 3, 4, 5, 6, 7, 8 and rows for V201 through V219.

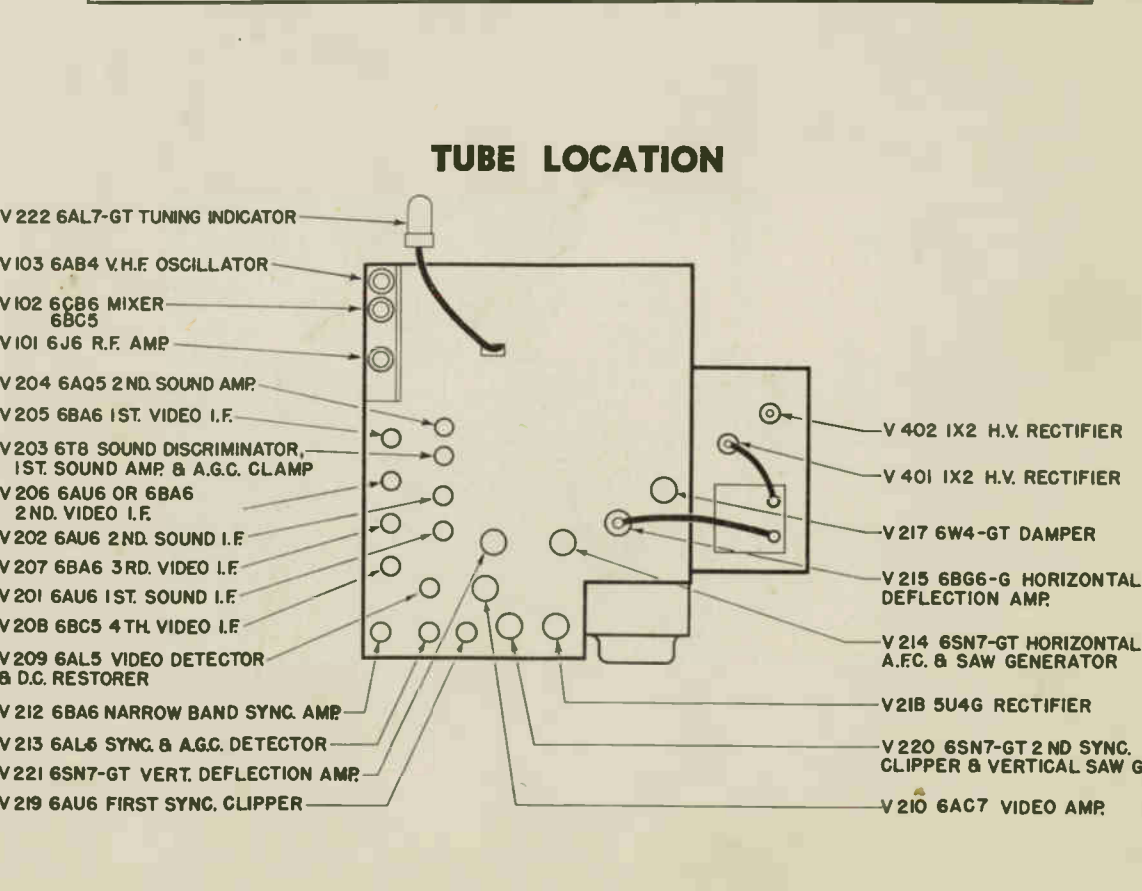


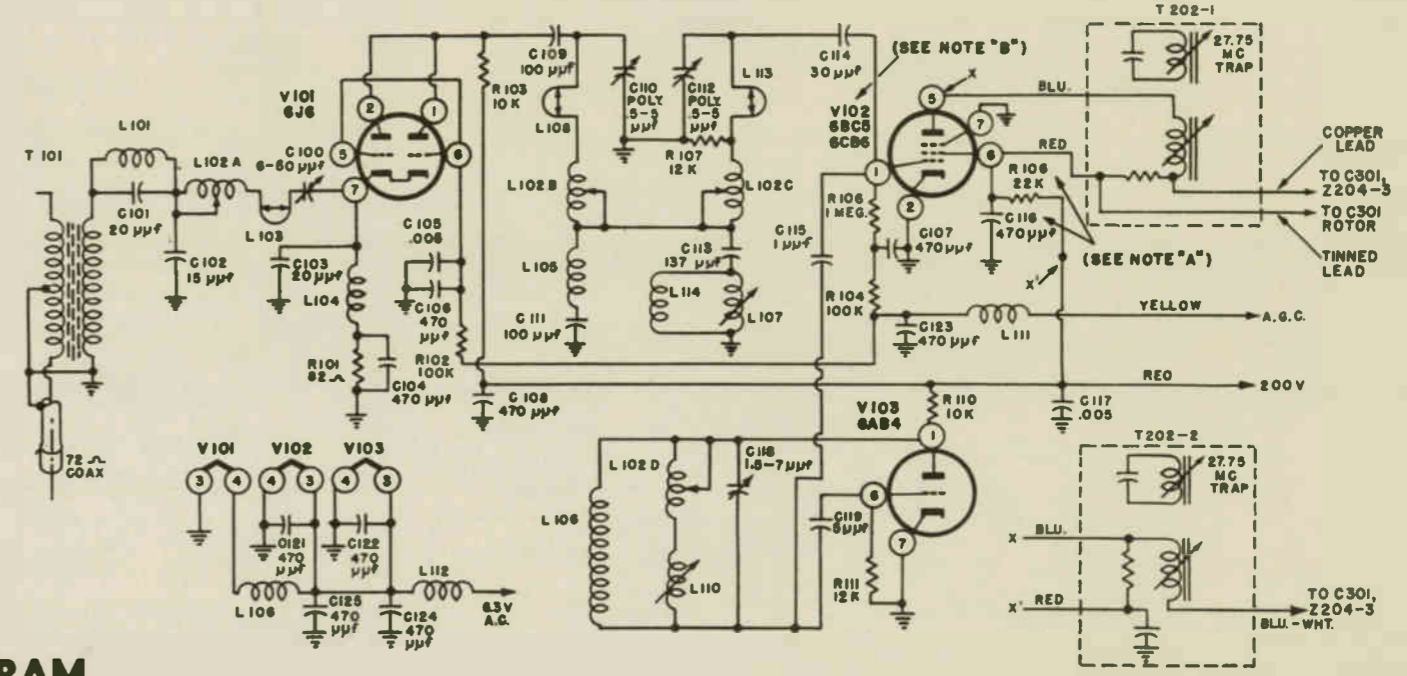
Table of parts and descriptions for ARDMORE, WESTERLY, AND MT. VERNON RA-112A. Columns include Symbol No., Part No., Description, and various part numbers (R260, R261, etc.).

Table of parts and descriptions for HIGH VOLTAGE POWER SUPPLY. Columns include Symbol No., Part No., Description, and various part numbers (R276, R277, etc.).

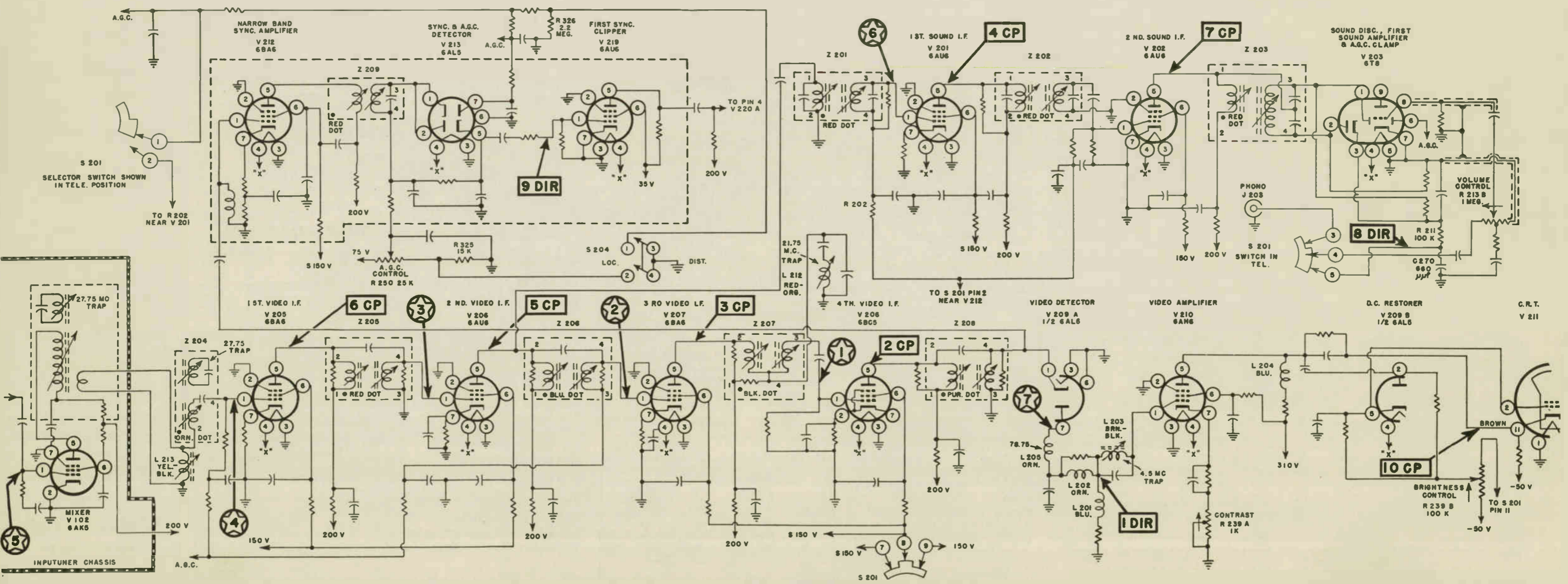
ABBREVIATIONS USED. Table mapping letters C, Cap, Ce, C402, C408, C404, C405, C401, L401, L402, L403, R402, R408, R404, R405, R406, S401, T401, V401, V402 to their respective component types like Composition, Capacitor, Ceramic, etc.

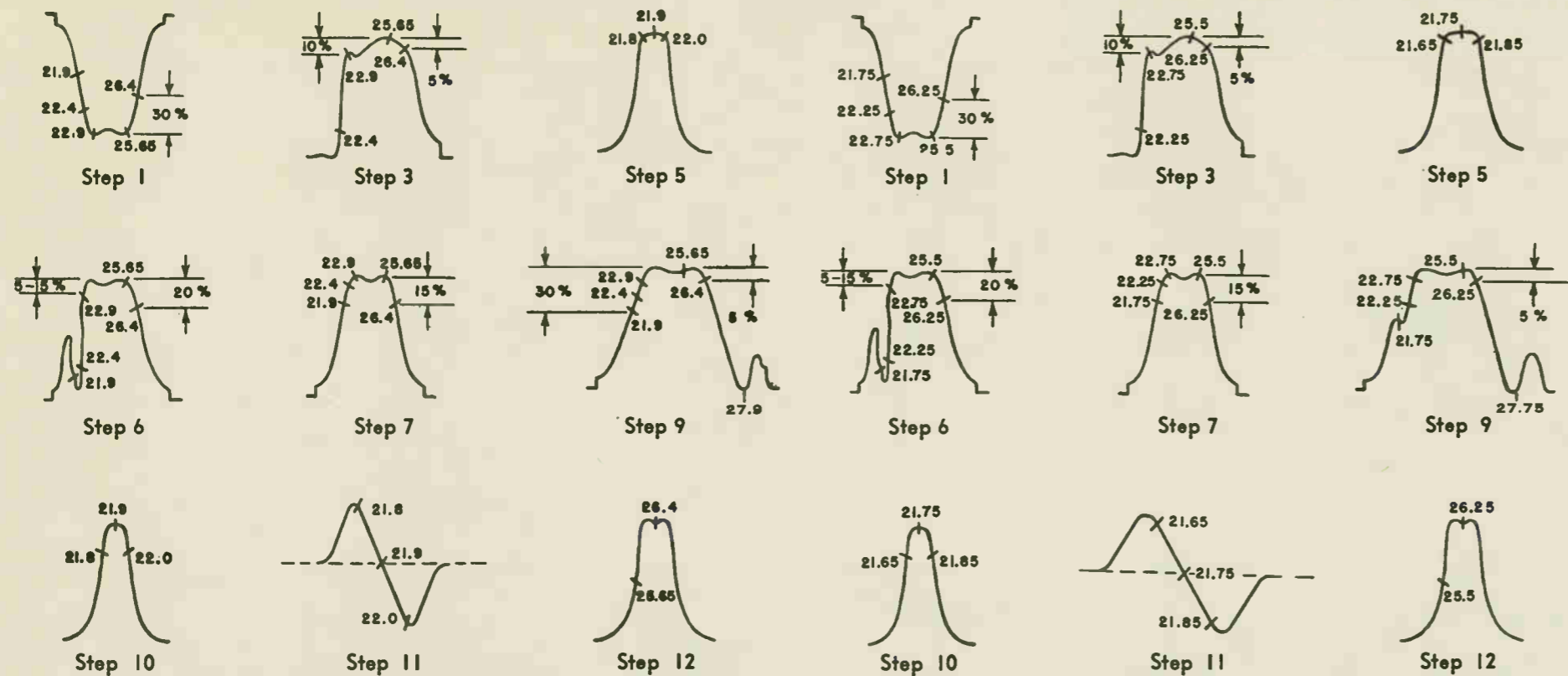
INPUTUNER

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
C100	08017500	Cap V Ce 8/50 mmf 350V	C124	Same as C104	
C101	08015790	Cap F Ce 20 mmf 10% 500V	C125	Same as C104	
C102	08012050	Cap F Ce 15 mmf 10% 500V	L101	21005891	Coil Antenna
C103	08012180	Cap F Ce 15 mmf 10% 500V	L102	21007011	Inductuner 4 section
C104	Same as C101		L103	21005751	Inductor End
C105	08016480	Cap F Ce 470 mmf 600V	L104	21005721	Coil Antenna
C106	08015610	Cap F Ce 5000 mmf 450V	L105	21005741	Coil Bandpass Coup
C107	Same as C104		L106	21007001	Inductor Filter
C108	Same as C104		L107	21005421	Inductor Bandwidth
C109	08016700	Cap F Ce 100 mmf 500V	L108	21005722	Inductor End
C110	08016650	Cap V P1 5/5 mmf 500V	L109	21007781	Coil Shunt
C111	Same as C109		L110	21005111	Inductor End Oec
C112	08015130	Cap F M 137 mmf 350V	L111	Same as L106	
C113	08018070	Cap F Ce 30 mmf 500V	L112	Same as L106	
C114	08018770	Cap F C 1 mmf 500V	L113	21005081	Inductor End Grid
C115	08012150	Cap F Ce 5000 mmf 450V (See Note A)	L114	350009601	Inductor Ground Btrap
C116	08012920	Cap F Ce 470 mmf 500V (See Note A)	R101	02031640	Res F 82 ohms 10% 1/4 W
C117	08015610	Cap F Ce 5000 mmf 450V	R102	02073101	Res F 100K 10% 1/4 W
C118	08016870	Cap V Ce 1.5/7 mmf N300	R103	02073108	Res F 10K 10% 2W
C119	08014780	Cap F Ce 5 mmf NFO			
C121	Same as C104				
C122	Same as C104				
C123	Same as C104				
R104	02078111	Res F 12K 10% 1/4 W	R107	02031900	Res F 10K 10% 1W
R105	02031900	Res F 10K 10% 1W	R108	02082190	Res F 1 meg 10% 1/4 W
R106	02041900	Res F 1 meg 10% 1/4 W	R109	02042190	Res F C 60K 10% 1/4 W (See Note A)
R107	02031900	Res F 10K 10% 1W	R110	02044890	Res F 10K 10% 1W
R108	02082190	Res F 1 meg 10% 1/4 W	R111	02031900	Res F 10K 10% 1W
R109	02042190	Res F C 60K 10% 1/4 W (See Note A)	R112	02004592	Ant Trans Asy
R110	02044890	Res F 10K 10% 1W	T101	21008401	IF Link Asy (See Note A)
R111	02031900	Res F 10K 10% 1W	T202-1	21007101	IF Coupling Asy (See Note A)
R112	02004592	Ant Trans Asy	T202-2	25000190	Tube Elec 6J6
T101	21008401	IF Link Asy (See Note A)	V101	25002670	Tube Elec 6CB6 (See Note B)
T202-1	21007101	IF Coupling Asy (See Note A)	V102	25002020	Tube Elec 6BC5 (See Note B)
T202-2	25000190	Tube Elec 6J6	V103	25001760	Tube Elec 6AB4
V101	25002670	Tube Elec 6CB6 (See Note B)			
V102	25002020	Tube Elec 6BC5 (See Note B)			
V103	25001760	Tube Elec 6AB4			
	09003780	Connector Male			
	42001250	Shield Tube			
	42002860	Shield Tube			



ALIGNMENT DIAGRAM





Curves for 21.9 MC sound IF for all RA-111A's and RA-112A below 12702, RA-113 below 13580.

Curves for 21.75 MC sound IF for RA-112A above 12702, RA-113 above 13580.

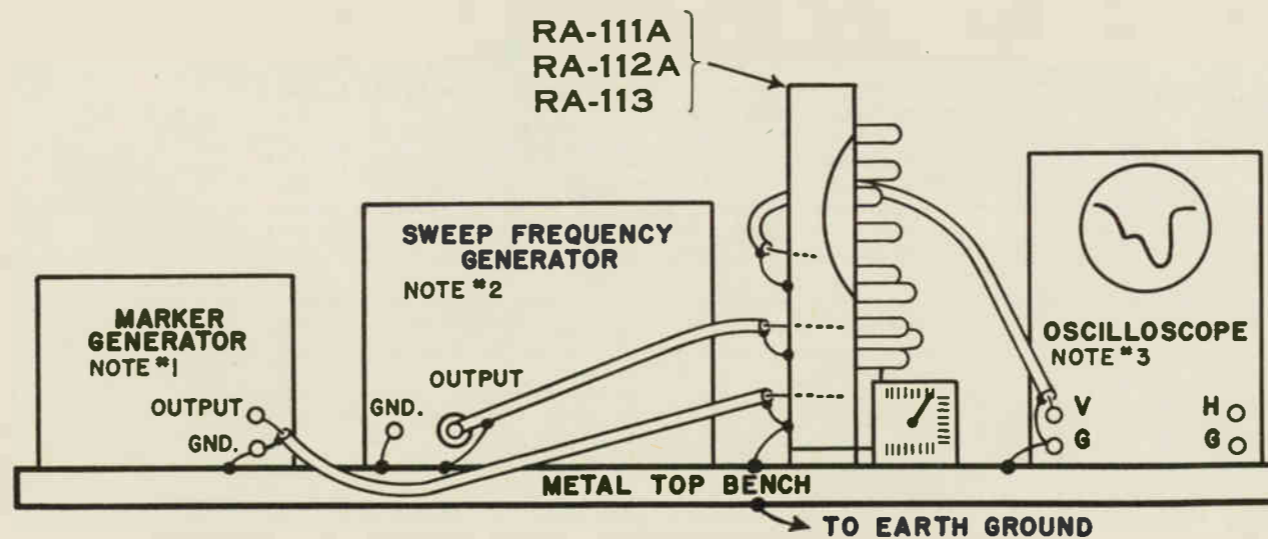
ALIGNMENT TABLE

Step No.	Connect Signal Generator (Note 3, 6)	Sweep Gen. Approx. Center Freq. (mc.)	Connect Oscilloscope To:	Adjust	Remarks
1	Pin 1 V208	24 mc. 8 mc. dev. min.	Junction L201, L202, L203 Direct 1 DIR	Z208	Adjust for curve shown. Note 7
2	Pin 1 V207	Not used	Pin 5 V208 thru crystal probe 2 CP	L212	Adjust for minimum scope indication. Use AM marker generator at sound IF. (21.75 or 21.9) Note 8
3	As above	24 mc. 8 mc. dev. min.	As above	Z207	Adjust for curve shown.
4	Pin 1 V205	Not used	As above	Top Z201	Adjust for minimum scope indication. Use AM marker generator at sound IF. (21.75 or 21.9)
5	Pin 1 V206	22 mc. 1 mc. dev. min.	Pin 5 V201 thru crystal probe 4 CP	Bottom Z201	Adjust for curve shown.
6	As above	24 mc. 8 mc. dev. min.	Pin 5 V207 thru crystal probe 3 CP	Z206	Adjust for curve shown. Note 7, 11
7	Pin 1 V205	As above	Pin 5 V206 thru crystal probe 5 CP	Z205	Adjust for curve shown. Note 7, 11
8	Pin 1 V102	Not used	Pin 5 V205 thru crystal probe 6 CP	Top Z204 Top T202	Adjust for minimum scope indication. Use AM marker generator at adj. channel sound IF. (27.75 or 27.9). Note 4, 12
9	As above	24 mc. 8 mc. dev. min.	As above	Bottom Z204 & T202, L213	Adjust for curve shown. Note 5
10	Pin 1 V201	21.75 mc. 1 mc. dev. min.	Pin 5 V202 thru crystal probe 7 CP	Z202	Adjust for curve shown. Note 9
11	As above	As above	Junction R211 and C270 direct 8 DIR	Z203	Adjust for curve shown.
12	Pin 1 V208	24 mc. 2 mc. dev. min.	Pin 1 V219, direct. Note 2 9 DIR	Z209	Adjust for curve shown. Note 2
13	Pin 7 V209	Not used	CRT cathode thru crystal probe 10 CP	L203	Adjust for minimum scope indication. Use AM signal generator at 4.5 mc.
14	Replace original tubes.				
15	Adjust AGC control, R250. Note 9				
16	Phase correction. Note 10				

CP indicates that oscillograph is connected through crystal probe. DIR indicates that oscillograph is connected directly. Refer to top and bottom photos on reverse side of this sheet for reference points.

ALIGNMENT SET-UP

1. Keep all coax cables as short and as well shielded as possible.
2. Ground metal bench to a good earth ground.
3. To test set-up feed signal into grid of mixer thru a 100 mmf condenser. If placing hand on any chassis or adding additional grounds at any point affects waveform or if Teleset has a tendency to oscillate, grounding must be added until these effects disappear.



NOTES:

1. Unmodulated and amplitude modulated RF should cover 20 to 30 mc range. Also 4.5 mc. Not necessary if marker is built into sweep frequency generator.
2. Should have center frequency range from 20 to 30 mc. Sweep should be adjustable up to 6 mc at least.
3. We recommend use of internal saw-tooth sweep. Waveforms shown were taken using this sweep. External sweep from sweep frequency generator may be used if preferred.

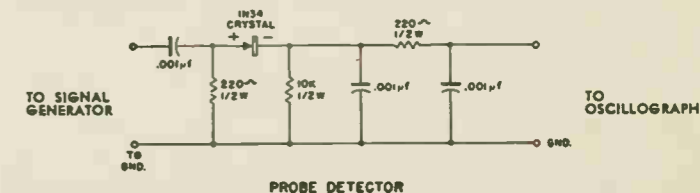
PRELIMINARY STEPS

CAUTION: IT IS IMPORTANT THAT ALL NOTES BE READ IN CONJUNCTION WITH ALIGNMENT.

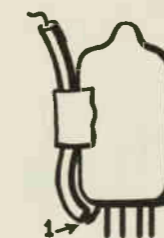
The following preliminary steps should be followed:
 Remove 6W4 (V217) damper, 6AK5 (V102) mixer, 6AB4 (V103) oscillator, 6AQ5 (V204) AF output (note 1) and 6AU6 (V219) first sync clipper.
 Adjust AGC control (R250) fully counter-clockwise. Turn selector switch to tele. position.

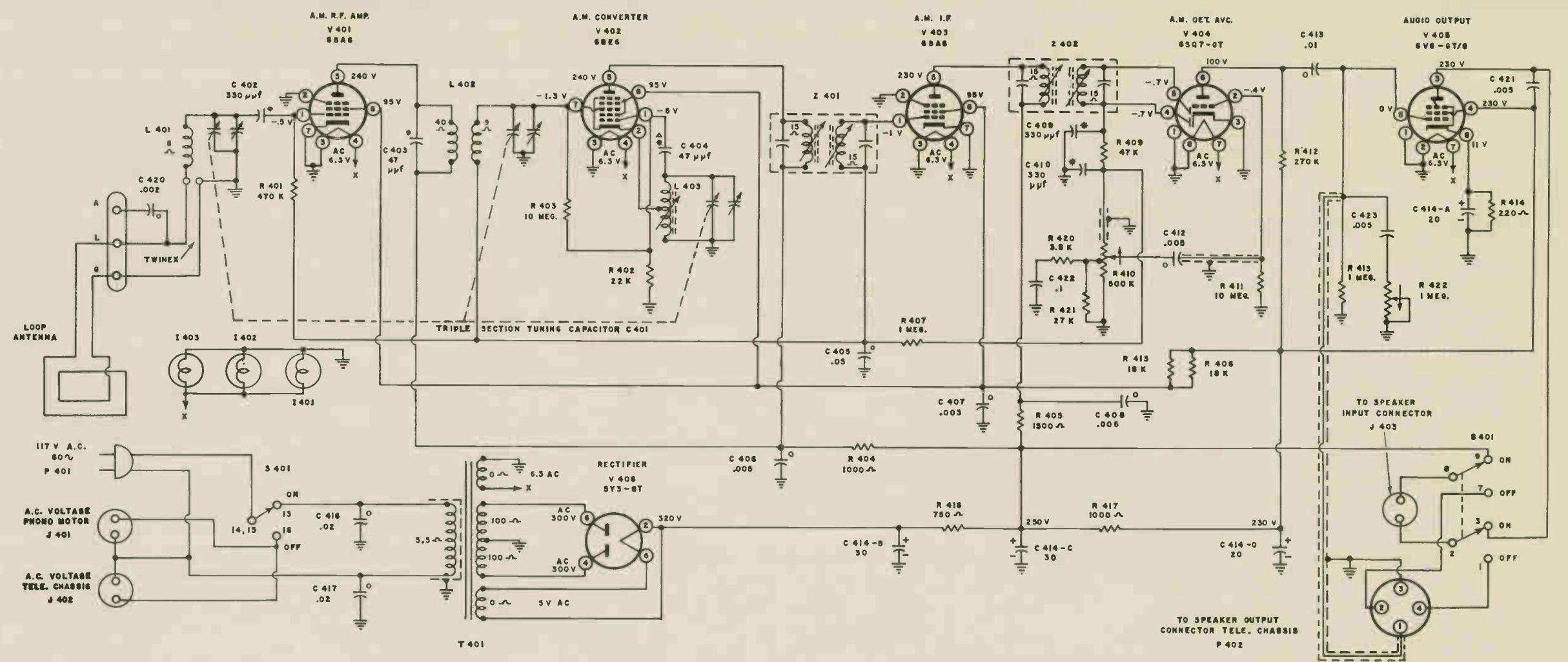
ALIGNMENT NOTES

1. 6AQ5 (V204) may be left in position only if speaker is connected.
2. Insert 6AU6 adapter at V219. This is a 6AU6 with pins 3 & 4 clipped off and an extension attached to pin 1. (Pin 1 is not clipped.)
3. If the sweep generator has no internal marker, a signal generator may be connected to the output cable of the sweep generator through a 100 mmf condenser to act as a marker generator.
4. Insert 6AK5 adapter at the mixer, V102. This adapter is a 6AK5 with pin 1 clipped off and an extension attached to the remainder of pin 1, as shown.
5. Inputuner should be tuned to channel 7, or higher. L213 adjusts the coupling. The bottom adjustment of T202 is reached through top of can with hex head alignment tool. Whenever tuner is replaced step 8 and 9 must be performed. All RA-111A's, RA-112A's, below 122696, and RA-113's, below 132212, do not contain L213 and the following pertains: Bandwidth of first stage of video IF is controlled by a link coupling in T202. This is adjusted and sealed in position at the factory and should not be touched. To obtain curve for step 9 in these early sets, adjust top of T202 and bottom of Z204. In case of Inputuner replacement, link coupling may also have to be adjusted. After adjustment, seal link in place with Miracle Adhesive C2M55 (obtainable from Du Mont Spare Parts Sales).
6. Maximum possible output of the sweep generator should be used, checking for overload.
7. If bandwidth is not correct, heat wire protruding from bottom of transformer with a soldering iron to soften adhesive. Then slide wire into sleeve for increased bandwidth and vice versa. Seal wire in place with C2M55.
8. Reference is made in the Alignment Table to the use of a crystal probe. This device is merely a crystal rectifier with the necessary filter. The polarity of the curve will be reversed if the terminals of the 1N34 crystal are reversed. This will cause no difficulty. The circuit of the crystal probe detector is as follows:



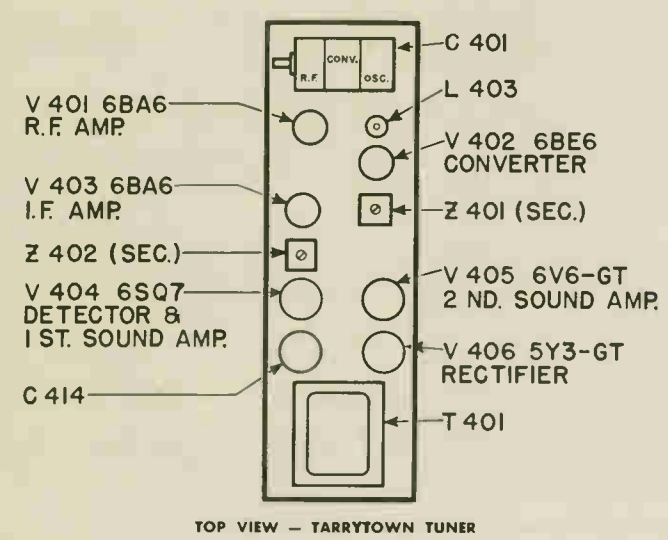
9. Tune by tuning eye to the strongest station. Turn AGC control fully clockwise. Then turn this control counter-clockwise until the picture brightens. Finally, turn slowly clockwise to point where picture just starts to dim.
10. Even though the alignment has been performed properly, it is usually necessary to correct the phase response of the video IF strip in order to remove smearing and ringing from the picture. This is done in the factory by applying a 61.25 mc signal modulated by a 100 kc square wave to the front end of the Teleset and displaying the detected square wave (which has passed through the video strip) on an oscillograph after amplifying it by means of a special wideband amplifier. The alignment is checked by observation of the square wave and SLIGHTLY re-adjusted, if necessary. If slight re-adjustment does not correct the square waveform, the chassis is completely re-aligned. A practical approach to this method in the shop (after completing the alignment procedure) is to tune in a strong test pattern known to be of good quality and ghost-free (by observation on several normal Telesets). If smearing or ringing is observed, the following adjustments are recommended. No other adjustments should be made. Limit adjustments only to those absolutely necessary.
 SMEAR: Re-adjust Z204 bottom slug not more than 1 turn.
 Re-adjust Z208 bottom slug not more than 1/2 turn.
 RING: Re-adjust Z205 top slug not more than 1/2 turn.
 Re-adjust Z207 top slug not more than 1/2 turn.
11. For early RA-112A, RA-113 and all RA-111A Telesets which have sound take-off point at plate of V205 instead of V206, interchange curves for steps 6 and 7.
12. Adjust only top of Z204 in the early sets referred to in Note 5.





DUMONT AM TUNER USED IN RA-113 TARRYTOWN

TARRYTOWN A.M. TUNER



PARTS LIST FOR AM Tuner RA-113 Tarrytown

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
C401	03019381	Cap V 3 Gang	R414	02037690	Res F C 220 ohms 10% 2W
C402	03014390	Cap Ce 330 mmf 20% 350V	R415	Same as R406	Res F W 750 ohms 5% 10W
C403	03012730	Cap Ce 47 mmf 10% 500V	R416	02017830	Res F C 1K 10% 2W
C404	03014200	Same as C403	R417	02037770	Res F C 3.9K 10% 1/2W
C405	03000950	Cap Pa .05 mf 25% 200V	R420	02031840	Res F C 3.9K 10% 1/2W
C406	03001570	Cap Pa .005 mf 25% 600V	R421	02031940	Res F C 27K 10% 1/2W
C407	Same as C406		R422	02051940	Res V C 1 meg 20% 1/4W
C408	Same as C406		S401	05003422	Switch AM Tuner
C409	Same as C406		T401	20004151	Transformer Power
C410	Same as C402		V401	25000240	Tube Elec 6BA6
C412	Same as C406		V402	25000250	Tube Elec 6BE6
C413	03012560	Cap Pa .01 mf 20% 600V	V403	Same as V401	
C414	03014400	Cap E 30/30/20 mf	V404	25000210	Tube Elec 6SQ7/G
C416	03018570	Cap F Pa .02 mf 20% 600V	V405	25000090	Tube Elec 6V6GT/G
C417	Same as C416		V406	25000220	Tube Elec 5Y3GT
C420	03014430	Cap Pa .002 mf 10% 600V	Z401	20004015	Transformer IF
C422	03013910	Cap Pa .1 mf 20% 200V	Z402	20004016	Transformer IF
C423	Same as C406			20004016	Transformer IF
L401	12001310	Lamp inc .15 amp 6.3V		34002380	Socket Tube Octal
L403	Same as L401			34001220	Socket Tube 7 Prong
L401	09018692	Connector Asy		09015560	Connector Female 2 contact
L402	21004321	Antenna Coil Asy		45002211	Pointer Dial
L403	21004331	Asy RF Coil		45002281	Dial AM Tuner
L403	21004311	Coil Osc Asy			
P401	50002980	Cable Asy Power			
P402	09018702	Connector Asy			
R401	02032580	Res F C 470K 20% 1/2W			
R402	02042580	Res F C 22K 20% 1/2W			
R403	02032500	Res F C 10 meg 20% 1/2W			
R404	02032660	Res F C 1K 20% 1/2W			
R405	02032420	Res F C 1.5K 20% 1/2W			
R406	02032430	Res F C 1.5K 20% 1/2W			
R407	02037920	Res F C 18K 10% 2W			
R409	02032600	Res F C 1 meg 20% 1/2W			
R410	02052600	Res F C 47K 20% 1/2W			
R411	02032520	Res V C 500K 20% 1/4W			
R412	02032060	Res F C 270K 10% 1/2W			
R413	02032130	Res F C 11 meg 10% 1/4W			

ALIGNMENT PROCEDURE FOR TARRYTOWN AM TUNER

The alignment should be made with the volume control fully on and tone control set for high frequency response. The output from the signal generator should be maintained as low as possible to prevent A. V. C. action from interfering with the correct alignment.

Connect an output meter across the voice coil of the speaker. Turn on signal generator and AM Tuner for approximately five minutes to stabilize. Connect a common ground to each unit. When connecting the signal generator output leads to the receiver, place a .25 mfd condenser in series with the inner conductor of the signal generator output lead.

1. Turn the tuning dial to the extreme low frequency end (gang condenser fully closed). At this position the tuning dial pointer should be halfway below the 550KC mark and the ends of the two concentric semi-circles.
2. Connect the signal generator output lead to the converter stator of tuning capacitor C401.
3. Set signal generator to 455KC and adjust tuning slugs (secondary and primary) on IF coils Z402 and Z401 in the order given for maximum deflection, reducing generator output as required. Repeat tuning until maximum output is obtained.
4. Connect generator to antenna input terminal.
5. Turn tuning dial pointer to 600 KC. Feeding in a 600KC signal from generator adjust oscillator coil L403 for maximum output.
6. Turn tuning dial pointer to 1500KC. Feeding in a 1500KC signal from generator adjust RF, converter and oscillator trimmers on tuning capacitor C401 for maximum audio output.

Resistance Measurements — All Readings to Ground

Tube	1	2	3	4	5	6	7	8
V401	2M	0	0	.05	Inf	Inf	0	
V402	20K	0.5	0	.05	Inf	Inf	1.5M	
V403	1.5M	0	0	.05	Inf	Inf	0	
V404	0	10M	0	500K	600K	Inf	.05	0
V405	0	0	Inf	Inf	1M	Nc	.05	220
V406	Nc	Inf	inf	100	Inf	100	Nc	Inf

Instrument used — RCA model 195-A VoltOhmyst for voltage and resistance. All readings in ohms. K = thousand M = million

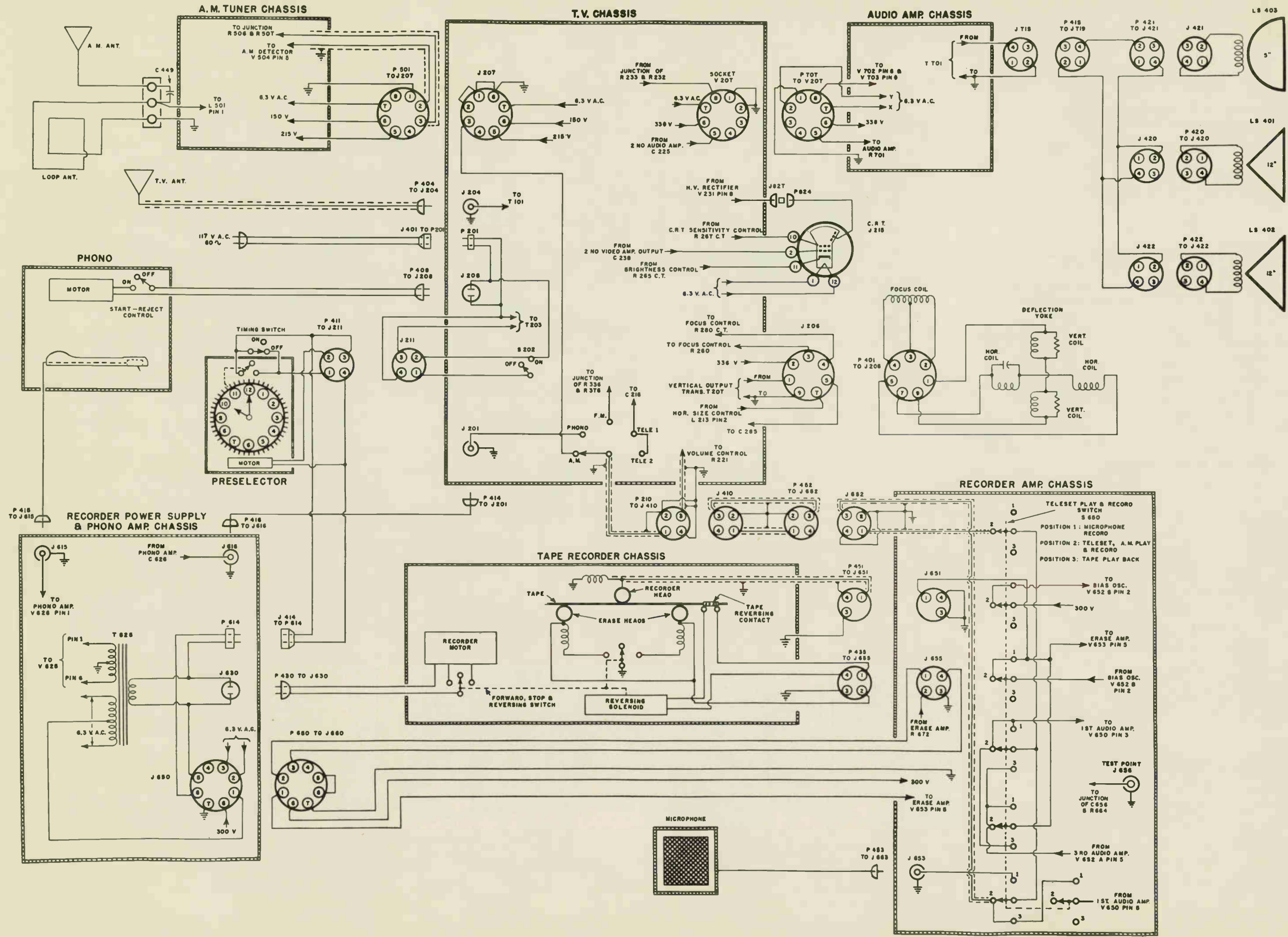
Resistance Readings of Coils

All readings in ohms. All readings shown were taken with coils disconnected.

Symbol	Resistance in ohms	
	Pri.	Sec.
L401	8.0	
L402	40.0	9.0
L403	.5	5.0
Z401	15.	15.
Z402	15.	15.
T401	5.5	200.0

MISCELLANEOUS PARTS LIST* Tarrytown Only — RA-113

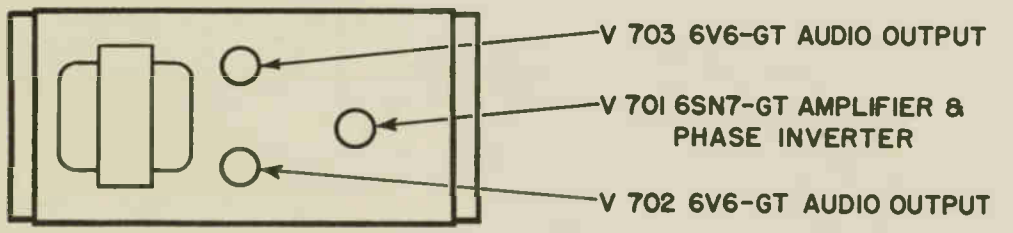
Symbol No.	Part No.	Description
C502	03014430	Cap Pa .002 mf 10% 600V
	35000512	Strap Support
	15000193	Reproducer Sound
	09003301	AM Tuner Asy
	13002720	Light Ind Cand DC
	13002770	Lamp Ind Cand DC 6W
	09004400	Connector Male 2 Contact
	12000211	Lens Indicator Light
	45001801	Knob Dual AM (Mahogany)
	45001803	Knob Dual AM (Blonde)
	18003091	Asy Loudspeaker
	22001501	Asy Loop Antenna



RESISTANCE MEASUREMENTS — ALL READINGS TO GROUND RA-116A AUDIO AMPLIFIER CHASSIS

Tube	1	2	3	4	5	6	7	8
V701	22K	125K	1K	180K	125K	1K	PH	0
V702	0	PH	9.5K	9K	260K	NC	0	330
V703	0	0	9.5K	9K	220K	NC	PH	330

Service Selector Switch in "TV Hghts on" position.
Teleset Play-Record Switch in Teleset Play and Record position.
All readings in ohms. K = thousand M = million.



TUBE LOCATION
AUDIO AMPLIFIER

RA-116A Section SWITCH POSITIONS FOR SELECTING SERVICE

Service	Timing Switch	Teleset Play Record Switch (on Tape Recorder)	Teleset Off-On-Vol.	Selector Switch	Start-Reject Control (on Phono)
TV Reception	Off	Teleset Play and Record	On	Tel. (either)	Off
AM Reception	Off	"	On	AM	Off
FM Reception	Off	"	On	FM	Off
3 Speed Record Player †	Off	"	On	Phono	On
Microphone Record	Off	Microphone Record	On	Phono	Off
Teleset Record	Off	Teleset Play and Record	On	Tel. (either)	Off
FM Record	Off	"	On	FM	Off
AM Record	Off	"	On	AM	Off
Phono Record	Off	"	On	Phono	On
Tape Playback	Off	Tape Playback	On	Phono	Off
Preselector *	On	Set to Desired Service	On	Set to Desired Service	Off

*To turn the Teleset on and off with the Preselector Clock, place the controls in the positions indicated in the chart, setting the Teleset Play-Record and the Selector Switch to the desired Service.

Note: The phono motor is independent of the Preselector Clock and therefore preselection of this service is not possible.

†The reminder to set the Timing switch A, and Recorder switch R, to their normal Teleset operating positions is not repeated in the Phonograph Operation section (page 6) of the Operating Handbook. These settings should be made, however, (as indicated by step 1 on page 5) when operation of the Record Player is desired.

PROBABLE FAULT LOCATION CHART

Symptom*	Probable Location of Fault
No TV, FM, AM, or Phono Sound and cannot record these services	1. Service Selector Switch 2. Connection P210 to J410 to P452 to J652 3. Teleset Play and Record Switch
No TV, FM, AM, or Phono Record	1. Teleset Play and Record Switch
No TV, FM Sound and cannot record these services	1. Sound IF strip on Main Chassis
No AM Sound or AM Record	1. AM Chassis 2. Cable between AM or TV chassis 3. Selector switch
No FM play, No FM Record	1. Selector switch
No Phono play, No Phono Record	1. Record Player 2. Connections between Record Player and Recorder Power Supply chassis or between Recorder Power Supply chassis and TV chassis. 3. Phono amplifier on Recorder Power Supply chassis. 4. Selector switch
No Microphone Record	1. Microphone 2. Microphone cord, plug, and jack on Recorder Amplifier chassis. 3. Teleset Play and Record Switch
No Tape Playback	1. Teleset Play and Record Switch
No Record or Playback	1. Tape Recorder or Recorder Amplifier
No Record, Playback or Phono Play	1. Recorder Power Supply chassis 2. A-c connection between Recorder Power Supply and TV chassis
No Sound in any Service, but Phono Record and Mike Record OK	1. Blown fuse in TV chassis

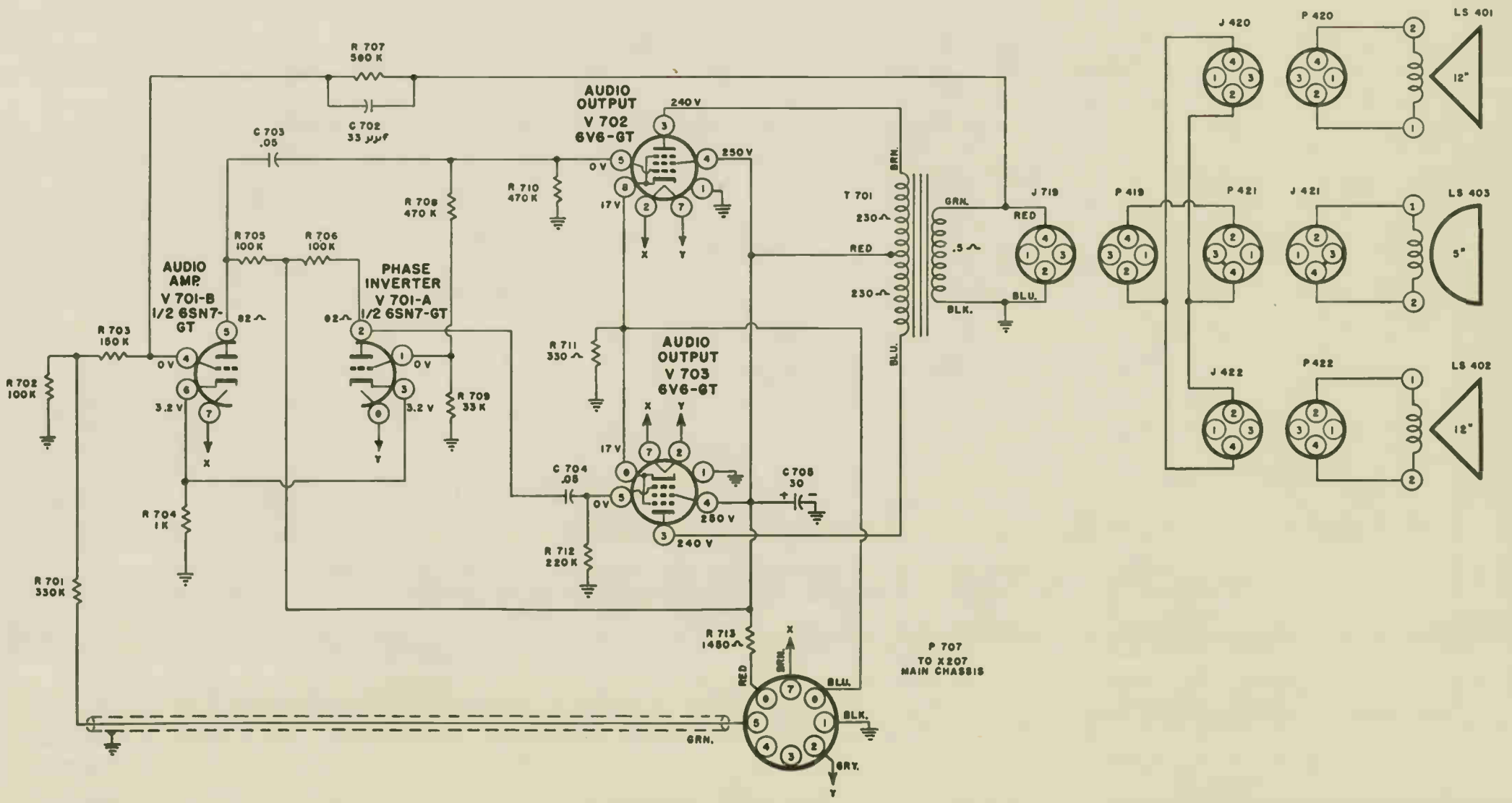
* In each of the cases given, it has been assumed that all other services are functioning properly.

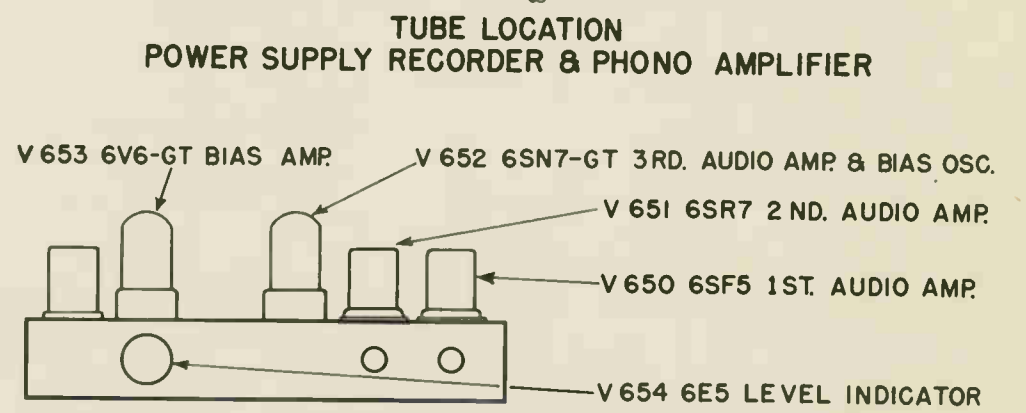
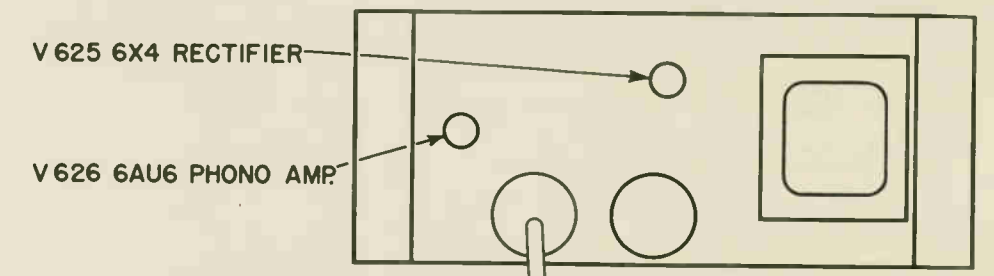
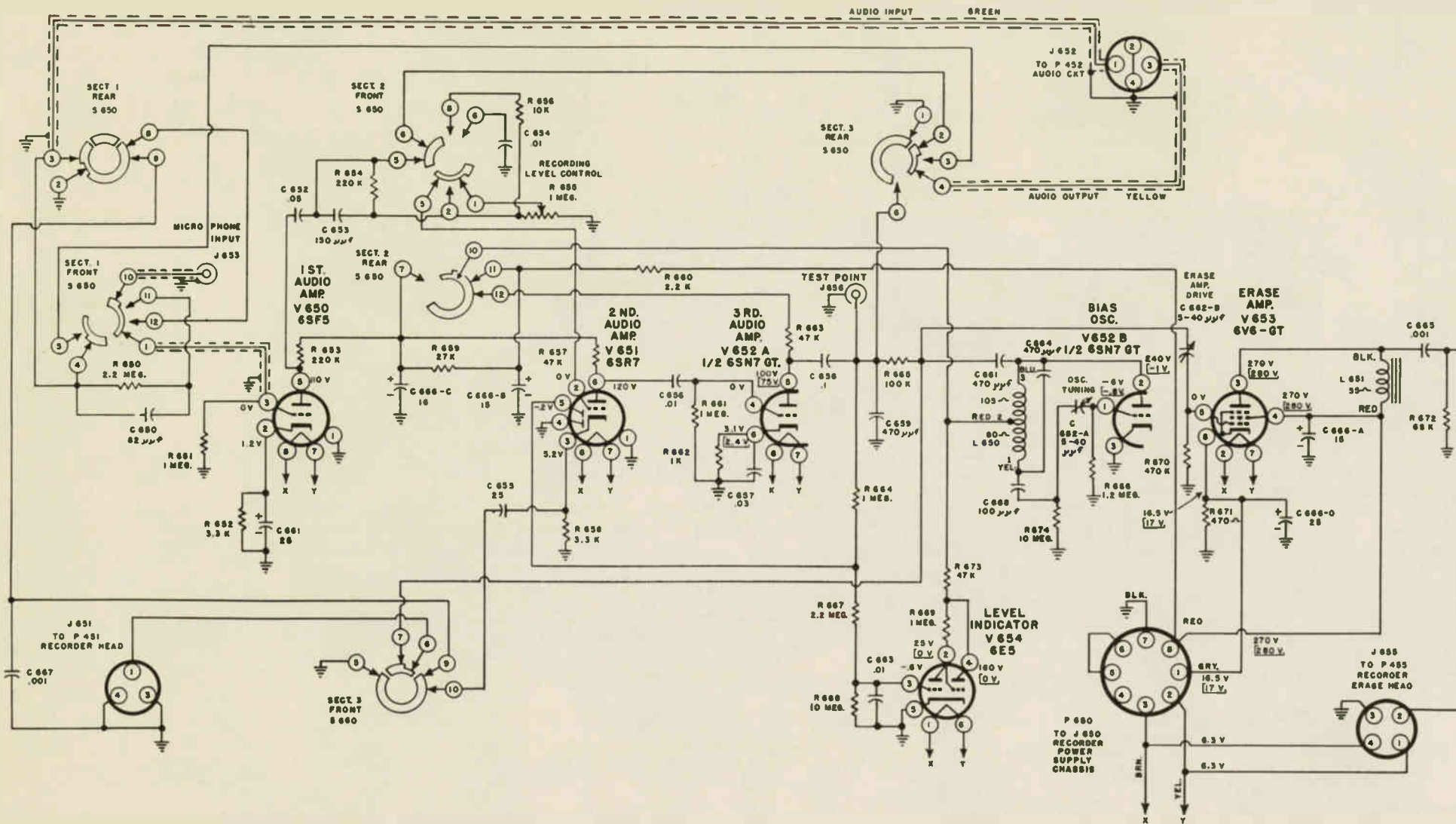
Parts List AUDIO AMPLIFIER 89004501

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
C702	00021250	Cap FM 22 muf 5% 500V	R700	02002000	Res PC 470K 10% 1/2W
C703	00015270	Cap Pa .05 mf 50% 500V	R709	02002000	Res PC 22K 10% 1/2W
C704	00010050	Same as C703	R710	02002000	Res PC 470K 10% 1/2W
C705	00015040	Cap E 50 mf 450V	R711	02007710	Res PC 300 ohms 10% 2W
E701	00023070	Res PC 220K 10% 1/2W	R712	02002000	Res PC 220K 10% 1/2W
E702	00023010	Res PC 100K 10% 1/2W	R713	02111500	Res FW 1450 10% 7W
E703	00021000	Res PC 150K 10% 1/2W	J719	09000450	Connector Assy Speaker
E704	00024770	Res PC 1K 10% 1W	P707	09015571	Connector Male 5 contact
E705	00023000	Res PC 100K 10% 1W	T701	20005221	Transformer Output
E706	00023000	Res PC 100K 10% 1W	V701	25000110	Tube 6SN7GT
E707	0002100	Res PC 500K 10% 1/2W	V702	25000090	Tube 6V6GT/G
			V703	Same as V702	

RA-116A Miscellaneous Parts List

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
C459	00014070	Cap Pa .002 20% 500V	45001270	Knob, Control, B	
J401	00002000	Cable Assy, AC Power	45001281	Knob, Tone Control, M	
J410	00017051	Cable Assy, Audio J410 and P452	45001282	Knob, Tone Control, B	
J412	00006483	Connector Assy, Inc Light	45001271	Knob, Vernier Tuning, M	
J414	00017810	Cable Assy, Power AC, Recorder	45001272	Knob, Vernier Tuning, B	
J420	00014581	Speaker Harness Assy, P419 to J420, P421 and J422	45001251	Knob, Tuning, M	
J422	Same as J420		45001252	Knob, Tuning, B	
L401	07000021	Deflection Yoke Assy	45001253	Level, Tone Control	
L402	21005451	Focus Coil Assy	45002191	Lever, Knob	
LS401	12000071	Assembly, Loudspeaker 12"	45002241	Knob, AM, M	
LS402	Same as LS401		45002242	Knob, AM, B	
LS403	19000051	Assembly, Loudspeaker 5"	45001872	Knob, AM Control, M	
P401	09014500	Connector Assy, Male 7 contact	45001873	Knob, AM Control, B	
P411	00017021	Connector Assy, Male 4 contact, Preselector	45001481	Window, Safety Glass	
P412	09006458	Connector Assy, Male 2 contact, Inc Light	64001292	Mask, CRT	
P414	50017072	Cable Assy, Phono P414 to P416	19034601	Recorder, Tape	
P416	Same as P414		74010800	Tape, Recording	
P419	Same as J420		32001670	Reel, Tape	
P421	12005941	Lamp Assy, Phono	17000430	Microphone, Crystal	
P422	Same as P419		19034611	Reproducer, Sound	
R401	02007840	Res F C 3.9K 10% 2W, Inc Lamp	64002511	Mask, Recorder Ind.	
S401	05004160	Switch, Rotary SPST, Timing	08004111	Preselector Clock	
V215	25002640	Tube, CRT 19AP4A	35011991	Mounting, Deflection Yoke	
			35008431	Mounting, Focus Coil	
			35002141	Strap, Bonding	
			35006602	Strap, Support	
			35008723	Strap, Support	
			35009731	Strap, Ground	
			64002521	Bezel, Dial M	
			64002522	Bezel, Dial B	
			64002521	Bezel, UHF and Clock, M	
			64002522	Bezel, UHF and Clock, B	
			64002521	Bezel, Recorder	
			32000971	Back Panel	
			32001012	Back Panel Assy	

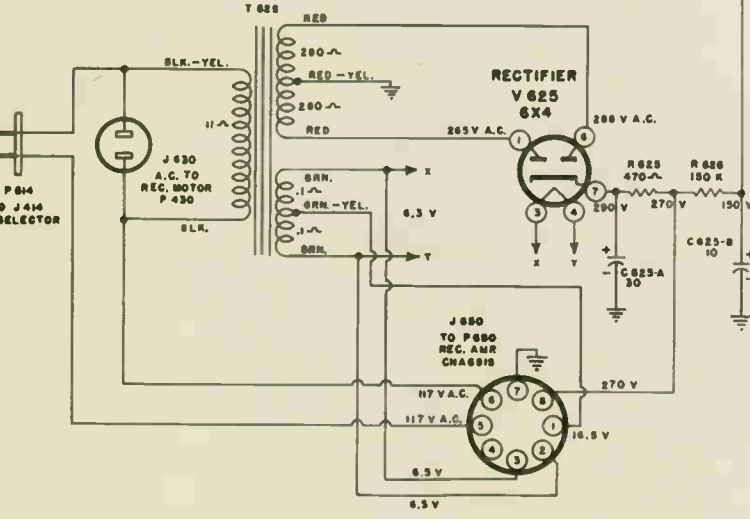
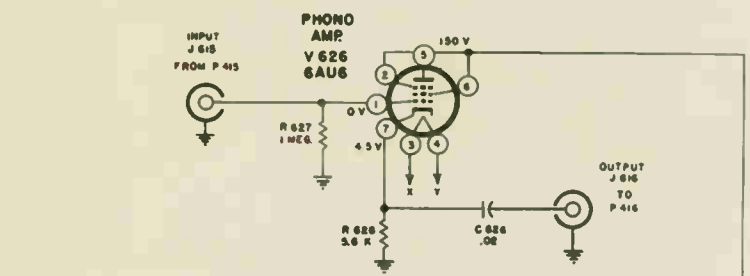




RESISTANCE MEASUREMENTS — ALL READINGS TO GROUND
RA-116A RECORDER AMPLIFIER CHASSIS

Tube	1	2	3	4	5	6	7	8
V650	0	8.3K	800K	NC	*30M	NC	470	470
V651	0	0 - 10K	3.3K	0	1M	*28M	470	470
V652	1.2M	*22M	0	1M	*22M	1K	470	470
V653	0	470	*40M	*40M	470K	NC	470	470
V654	470	*28M	2.5M	*18M	0	470		

Service Selector Switch in "TV Lights on" position.
Teleset Play-Record Switch in Teleset Play and Record position.
Two readings for a given point indicate an adjustable resistance is in the measured circuit.
* Asterisk in front of resistance value indicates resistance may be higher.
All readings in ohms. K = thousand M = million.



RA-116A
RECORDER P.S. & PHONO AMP

Parts List
RECORDER POWER SUPPLY 89005401

Symbol No.	Part No.	Description
C625	03014110	Cap E 80/10 mf 450/450V
C626	03101220	Cap F Pa .02 mf 20% 200V
R625	03037730	Res FC 470 ohms 10% 2W
R626	02047730	Res FC 150K 10% 1/2 W
R627	02032030	Res FC 1 meg 10% 1/2 W
R628	02042130	Res FC 5.6K 10% 1/2 W
J615	09002760	Connector Female 1 contact
J616	Same as J615	
J618	09015560	Connector Female 2 contact
J619	04002330	Socket Tube Octal
J650	09005000	Connector Male 2 contact
P614	09005000	Transformer Power
T625	25000050	Transformer Power
V625	25000170	Tube Elec 6X4
V626	25000050	Tube Elec 6AU6

RESISTANCE MEASUREMENTS — ALL READINGS TO GROUND
RA-116A RECORDER POWER SUPPLY AND PHONO AMPLIFIER CHASSIS

Tube	1	2	3	4	5	6	7
V625	350	NC	470	470	NC	350	*50M
V626	1M	*50M	470	470	*50M	*50M	5.6K

Service Selector Switch in "TV Lights on" position.
Teleset Play-Record Switch in Teleset Play and Record position.
* Asterisk in front of resistance value indicates resistance may be higher.
All readings in ohms. K = thousand M = million.

Parts List
RECORDER AMPLIFIER 89005301

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
C650	03020480	Cap FM 82 mmf 10% 500V	R652	02031830	Res FC 3.3K 10% 1/2 W
C651	03015310	Cap FE 25 mf 25V	R653	02032050	Res FC 220K 10% 1/2 W
C652	03019640	Cap Pa .05 mf 20% 400V	R654	Same as R653	
C653	03020140	Cap FM 150 mmf 10% 600V	R655	01029500	Res VC 1 meg 30% 1/2 W
C654	03008410	Cap Pa .01 mf 10% 400V	R656	02031890	Res FC 10K 10% 1/2 W
C655	Same as C651		R657	02031970	Res FC 47K 10% 1/2 W
C656	08001450	Cap Pa .01 mf 20% 400V	R658	Same as R652	
C657	08100990	Cap Pa .03 mf 10% 200V	R659	02034940	Res FC 27K 10% 1W
C658	03019250	Cap Pa .1 mf 20% 400V	R660	02034810	Res FC 2.2K 10% 1W
C659	03020510	Cap FM 470 mmf 10% 500V	R661	Same as R651	
C660	Same as C659		R662	02031770	Res FC 1K 10% 1/2 W
C661	03019921	Cap VM 5-40 mmf 2 SEC	R663	03034970	Res FC 47K 10% 1W
C662	03014900	Cap Pa .01 mf 20% 200V	R664	Same as R651	
C663	03100000	Cap Pa .001 1KV	R665	02032010	Res FC 100K 10% 1/2 W
C664	Same as C659		R666	02032140	Res FC 1.2 meg 10% 1/2 W
C665	03019990	Cap E 15/15/15/25 mf	R667	Same as R650	
C666	03019850	Cap FM .001 mf 10% 500V	R668	02032250	Res FC 10 meg 10% 1/2 W
C667	03029440	Cap FM 100 mmf 10% 500V	R669	Same as R651	
C668	03020430	Cap FM 100 mmf 10% 500V	R670	02032090	Res FC 470K 10% 1/2 W
J651	09018710	Connector Female 3 contact	R671	02037730	Res FC 470 ohms 10% 2W
J652	50017711	Connector Assy Fem. 4 contact	R672	02037990	Res FC 68K 10% 2W
J653	09018750	Connector Female 1 contact	R673	Same as R663	
J654	09018730	Connector Female 4 contact	R674	02032660	Res FC 10 meg 20% 1/2 W
L650	21006061	Oscillator Coil Assy	S650	05004171	Switch Rotary 3 pos.
L651	50017732	Choke Filter	V650	25002470	Tube Elec 6SF5
P650	21004722	Transformer Power	V651	25002480	Tube Elec 6SR7
R650	02032170	Res FC 2.2 meg 10% 1/2 W	V652	25000110	Tube Elec 6SN7GT
R651	02032170	Res FC 2.2 meg 10% 1/2 W	V653	25000090	Tube Elec 6V6GT/G
R652	02032130	Res FC 1 meg 10% 1/2 W	V654	25002460	Tube Elec 6E5

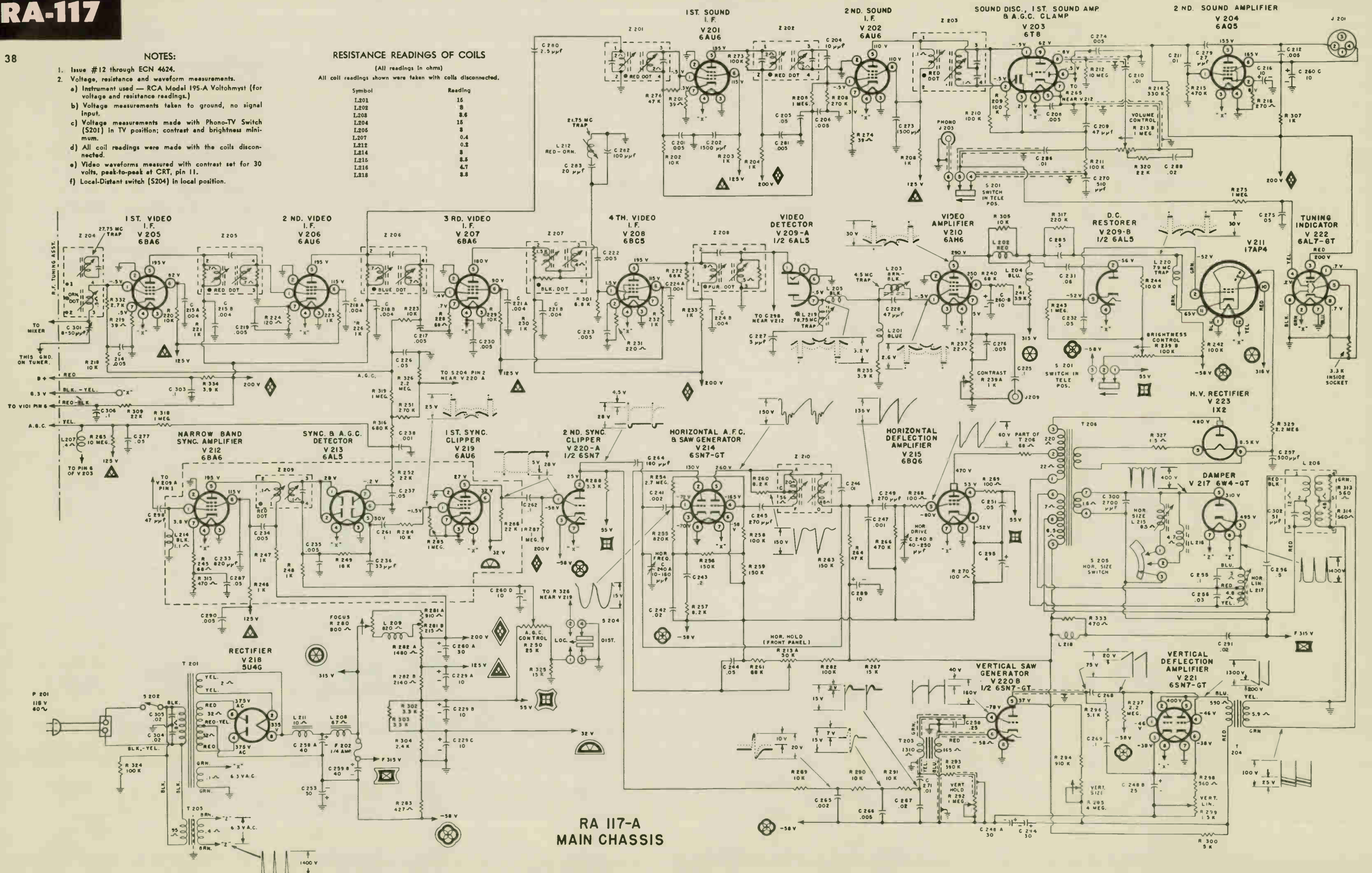
NOTES:

1. Issue #12 through ECN 4624.
2. Voltage, resistance and waveform measurements.
 - a) Instrument used — RCA Model 195-A Voltmyst (for voltage and resistance readings.)
 - b) Voltage measurements taken to ground, no signal input.
 - c) Voltage measurements made with Phono-TV Switch (S201) in TV position; contrast and brightness minimum.
 - d) All coil readings were made with the coils disconnected.
 - e) Video waveforms measured with contrast set for 30 volts, peak-to-peak at CRT, pin 11.
 - f) Local-Distant switch (S204) in local position.

RESISTANCE READINGS OF COILS

(All readings in ohms)
All coil readings shown were taken with coils disconnected.

Symbol	Reading
L201	16
L202	8
L208	8.6
L204	16
L205	8
L207	0.4
L212	0.2
L214	8
L215	8.5
L216	4.7
L218	3.8



**RA 117-A
MAIN CHASSIS**

RECEIVER PARTS LIST RA-117 A

Unless otherwise stated, the tolerance shown is plus and minus of the indicated value. Where two or more part numbers are shown, the second and third numbers, if any, are alternate parts.

Abbreviations used: C Cap Co Composition Capacitor Ceramic

Table with columns for Symbol No., Part No., Description, Symbol No., Part No., Description, Symbol No., Part No., Description. Lists various electronic components like capacitors, resistors, and tubes.

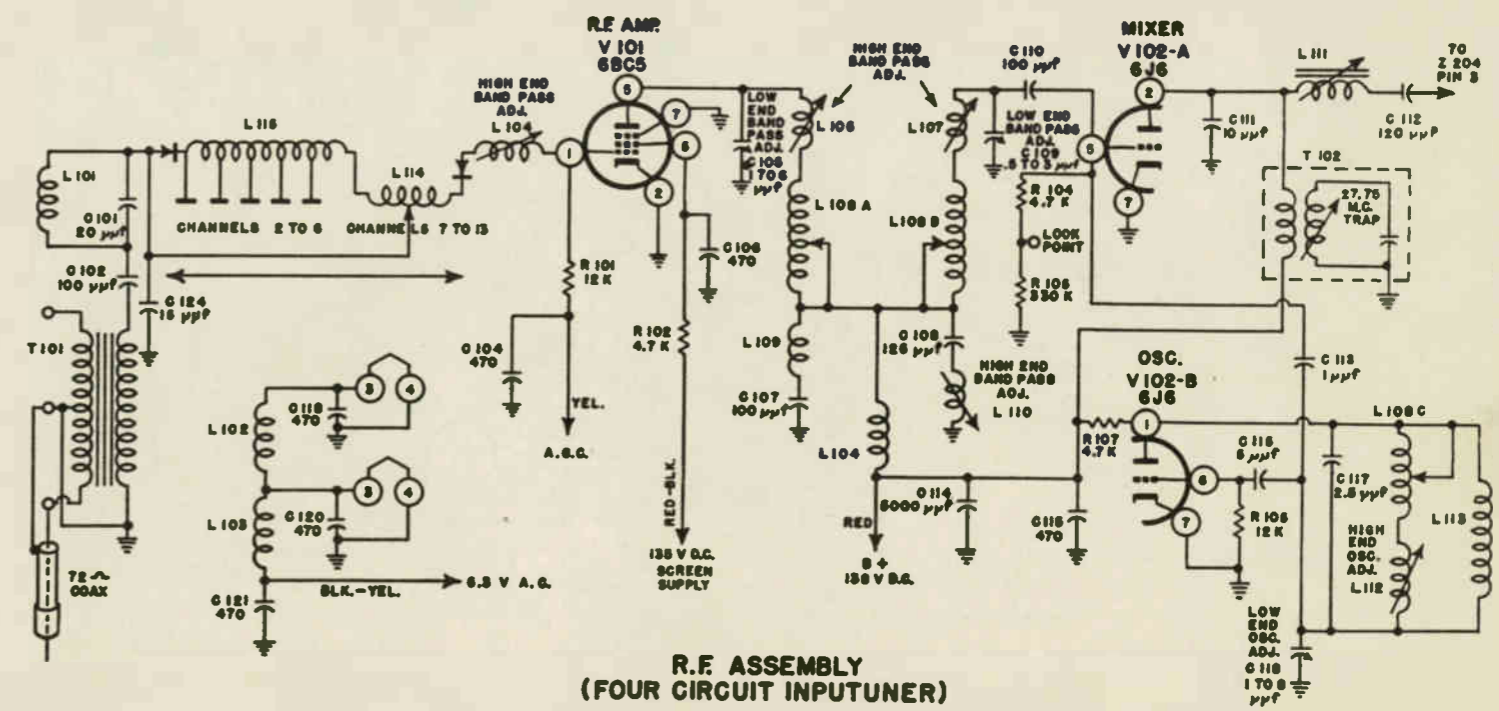
RESISTANCE MEASUREMENTS — ALL READINGS TO GROUND RA-117 CHASSIS

Table with columns for TUBE, 1, 2, 3, 4, 5, 6, 7, 8. Lists resistance measurements for various tubes.

Rear selector switch in "TV" position. Instrument used—RCA Model 105-A Voltmeter. All readings in ohms—K = thousand M = million. Two readings for a given point indicate an adjustable resistance in the measured circuit.

RF ASSEMBLY PARTS LIST 89002941

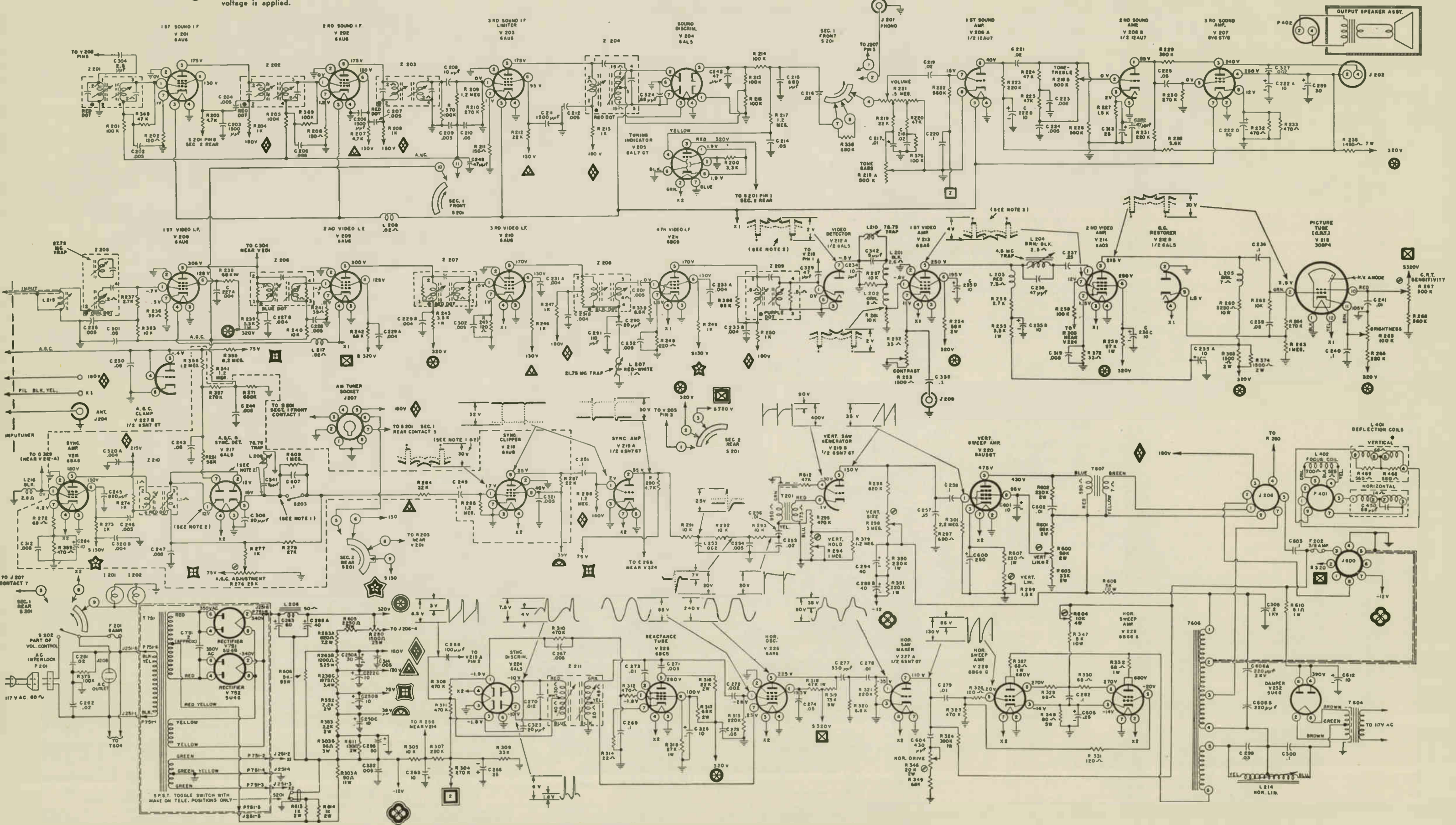
Table with columns for Symbol No., Part No., Description, Symbol No., Part No., Description. Lists RF assembly parts like capacitors, inductors, and switches.



R.F. ASSEMBLY (FOUR CIRCUIT INPUTUNER)

- USE OF SYMBOLS
- ⊗ Large encircled symbol indicates source of voltage.
 - ⊙ Small uncircled symbol indicates point to which voltage is applied.

MAIN CHASSIS



PARTS LIST

Table with columns: Symbol, Part No., Description, Part No., Description. Lists various electronic components like capacitors, resistors, and tubes.

Table with columns: Part No., Description, Part No., Description. Continues the list of electronic components.

HIGH VOLTAGE CHASSIS PARTS LIST

Table with columns: Symbol, Part No., Description, Part No., Description. Lists high voltage chassis parts like capacitors and resistors.

CUP BACK PANEL

Table with columns: Part No., Description. Lists parts for the cup back panel such as support structures and shields.

Table with columns: Part No., Description. Lists various electronic components like capacitors and resistors.

RF TUNER

Table with columns: Symbol, Part No., Description. Lists RF tuner components like capacitors, inductors, and transformers.

LOW VOLTAGE SUPPLY CHASSIS

Table with columns: Symbol, Part No., Description. Lists low voltage supply chassis components like capacitors and resistors.

CABINET PARTS LIST

Table with columns: Part No., Description. Lists cabinet parts like control knobs, switches, and connectors.

NOTES

- Opening S203 eliminates horizontal pull and improves horizontal sync stability. Closing S203 improves sync noise immunity. Amplitude of waveform at grid of V216 will change when S203 is opened or closed.
- Amplitude of waveforms and voltages is affected by setting of a-g-c pot. R278.
- Amplitude of waveform depends on setting of contrast control R253.
- Voltage, resistance and waveform measurements
 - Instrument used RCA WV-97A Volt/hyst (for voltage and resistance). Variations of $\pm 20\%$ are not abnormal.
 - Voltage measurements taken to ground, no signal input.
 - Voltage measurements made with switch in TV position, lights on.
 - All coil readings taken with coils disconnected.
- Switch sections viewed from front end of switch. Rotor in extreme CW (TV) Position 4. Switch positions: 1. Phono. 2. FM 3. TV, light on; 4. TV, light off. Switch has variable stop to exclude AM position.
- Chassis with Serial No. 19326 and higher have separately mounted low voltage power supplies.

Resistance Measurements — All Readings to Ground
RA-119A HIGH VOLTAGE CHASSIS

TUBE	1	2	3	4	5	6	7	8	Top Cap
V301	40K	325K	0	1M	325K	4.7K	.1	0	
V302	0	0	300K	1.1M	300K	320K	.1	450K	
V303	NC	.1	3.5K	3.5K	450K	NC	0	Inf	
V304	NC	0	Inf	NC	50K	NC	.1	Inf	320K
V305	NC	0	Inf	NC	50K	NC	.1	Inf	320K
V306	NC	Inf	NC	Inf	NC	NC	Inf	Inf	320K
V307	NC	Inf	NC	Inf	NC	NC	Inf	Inf	Inf
V308	NC	0	NC	NC	300K	NC	NC	NC	NC
V309	NC	Inf	NC	5.2	NC	6.2	NC	Inf	
V310	NC	Inf	NC	5.2	NC	6.2	NC	Inf	
V311	0	56K	0	2.	0	NC	56K	NC	
V312	1M	65K	0	.1	470K	NC	100K	NC	
V313	470K	8.5K	5.6K	1M	8.5K	2.2K	0	.1	

Resistance Measurements — All Readings to Ground
RA-119A MAIN CHASSIS

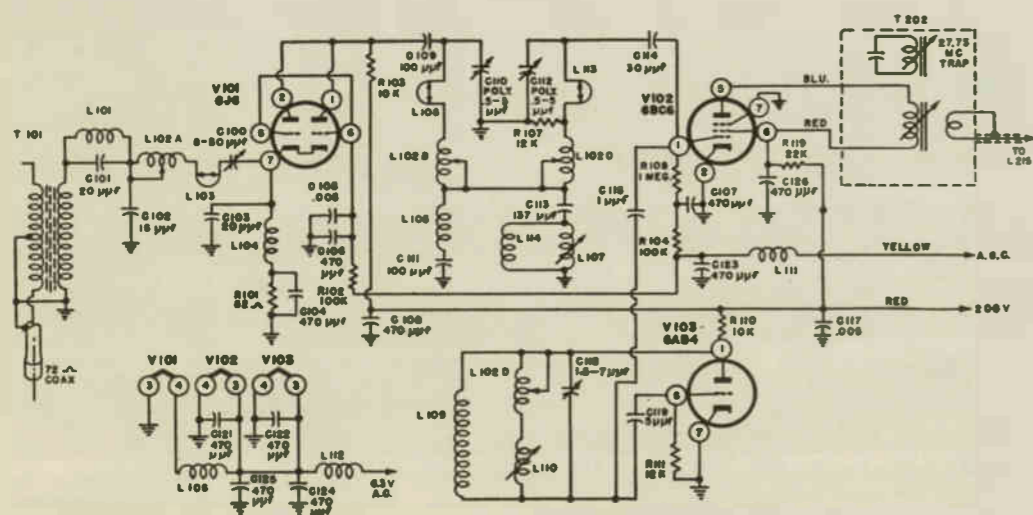
TUBE	1	2	3	4	5	6	7	8
V201	1.6M	0	.1	0	4.2K	8K	120	
V202	1.6M	0	.1	0	4.2K	8K	150	
V203	270K	0	.1	0	4.2K	25K	150	
V204	0	100K	.1	0	200K	0	100K	
V205	3.8K	.1	4.2K	1.4M	0	0	3.8K	
V206	160K	600K	1.5K	0	250K	900K	0	
V207	0	0	6.2K	6K	270K	NC	.1	295
V208	1.5M	0	0	.1	8K	72K	39	
V209	1.5M	0	0	.1	8K	72K	39	
V210	.7	0	0	.1	5.8K	4.3K	120	
V211	6.8K	220	0	.1	4K	4K	220	
V212	.5	0	0	.1	1M	0	5K	
V213	5K	0	0	.1	11K	60K	33-1.6K	
V214	110K	33	.1	0	7.6K	31K	110K	
V215	0	1.3M						
V216	2.6	0	0	.1	4.2K	4.2K	538	
V217	4.4K	4.4K	0	.1	24K	0	1M	
V218	1.2M	0	0	.1	25K	1.8K	0	
V219	1.2M	7.5K	0	470K-1M	1M-5.5M	175	.1	0
V220	2.2M	0	800-2.2K	NC	95K	NC	.1	33K-45K
V221	1M	510K	0	.1	33K	0	510K	
V225	1.5M	25	0	.1	30K	21K	25	
V226	220K	0	.1	0	12K	50K	20	
V227	220K	500K	0	1.7M	1.7M	0	.1	
V228	NC	0	80	200K	470K	500K	.1	200K
V229	NC	.1	80	500K	470K	NC	0	200K
V232	NC	100K	NC	200K	NC	200K	NC	100K

* Pin #9—1 ohms
† Pin #10—4 to 240K, Pin #11—0 to 70K, Pin #12—1 ohms
‡ Top cap—100 K

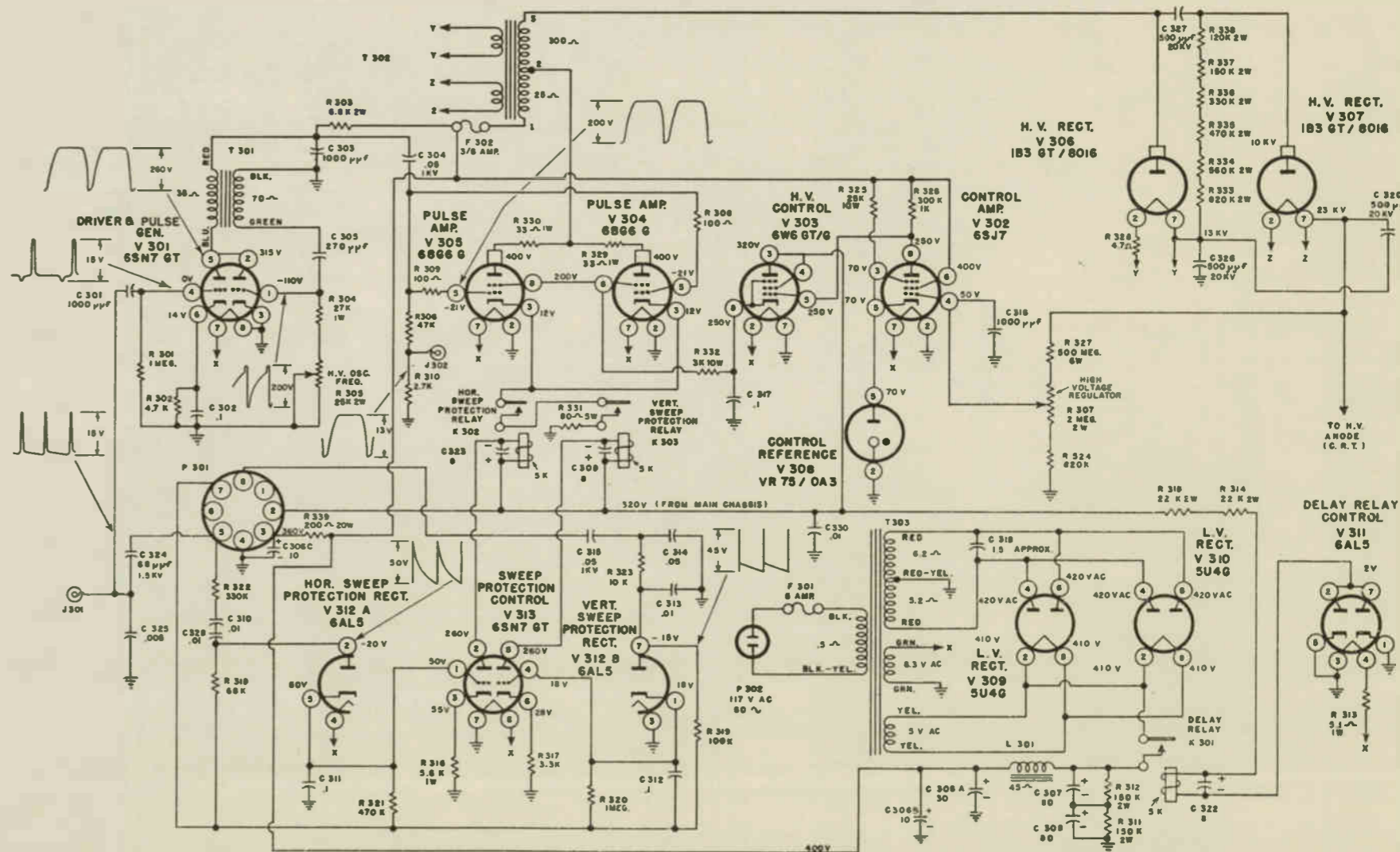
Resistance Measurements — All Readings to Ground
RA-119A LOW VOLTAGE CHASSIS

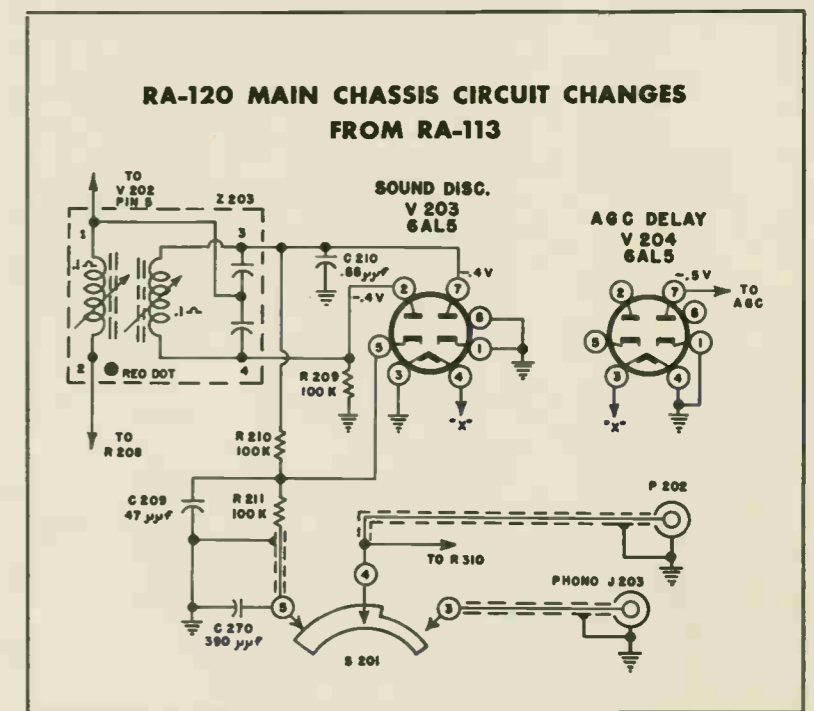
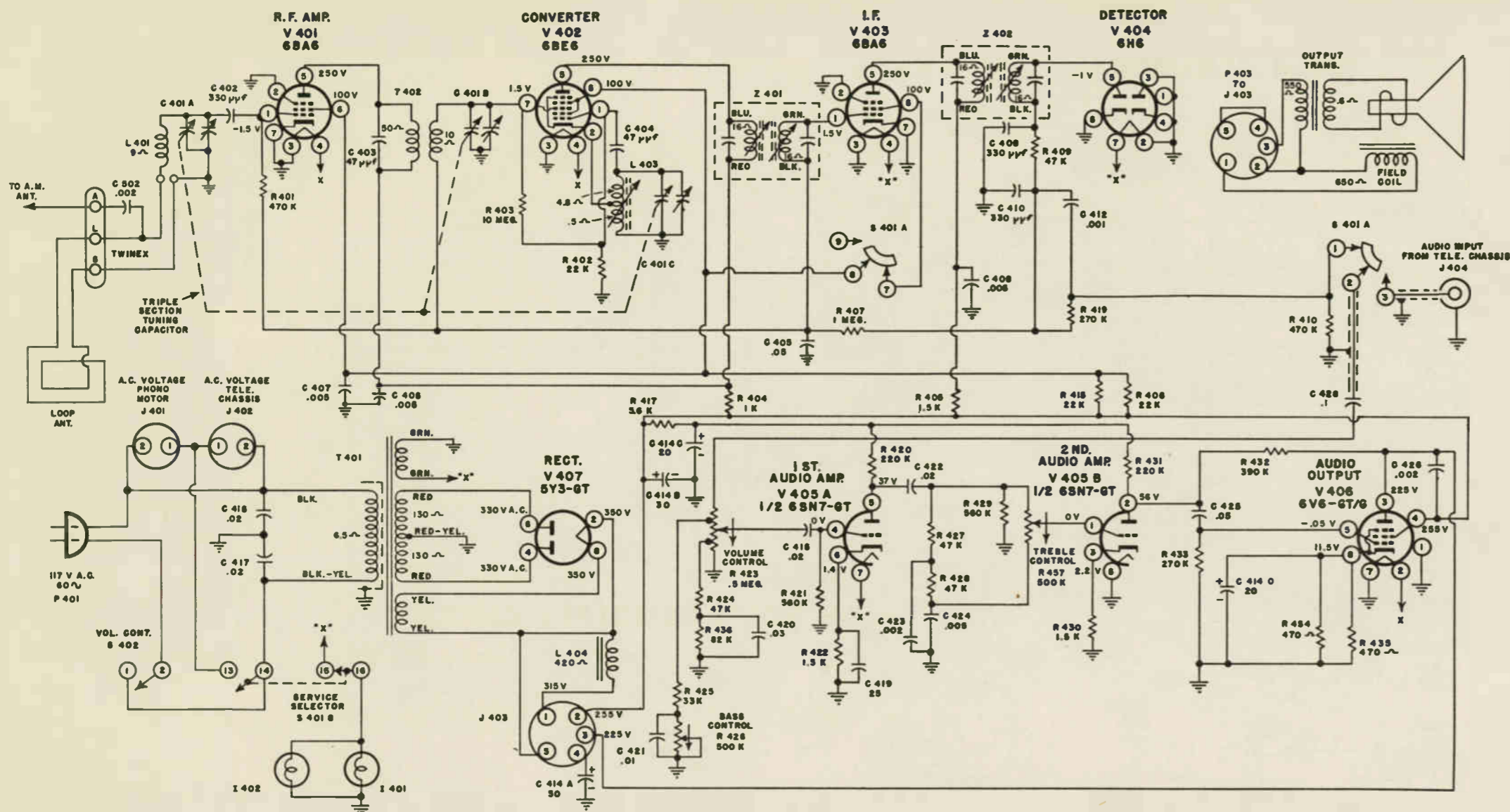
TUBE	1	2	3	4	5	6	7	8
V751	NC	3.8K	NC	120	NC	120	NC	3.8K
V752	NC	3.8K	NC	120	NC	120	NC	3.8K

R.F. TUNER



HIGH VOLTAGE SUPPLY CHASSIS





AM TUNER AND AUDIO AMPLIFIER

Symbol	Part No.	Description
C401	03 019 381	Cap Var. 3 gang
C402	03 014 360	Cap F Ca 330 mmf 20% 350V
C403	03 012 730	Cap F Ca 47 mmf 10% 500V
C404	03 014 200	Cap F Ca 47 mmf 10% 500V
C405	03 000 950	Cap F Pa .05 20% 200V
C406	03 001 570	Cap F Pa .005 ml 25% 600V
C407	03 001 570	Cap F Pa .005 ml 25% 600V
C408	03 001 570	Cap F Pa .005 ml 25% 600V
C409	03 014 390	Cap F Ca 330 mmf 20% 350V
C410	03 014 390	Cap F Ca 330 mmf 20% 350V
C411	03 013 860	Cap F Pa .001 ml 25% 200V
C412	03 014 400	Cap F E 30/30/20 ml
C413	03 018 570	Cap F Pa .02 ml 20% 600V
C414	03 018 570	Cap F Pa .02 ml 20% 600V
C415	03 018 570	Cap F Pa .02 ml 20% 600V
C416	03 018 470	Cap F Pa .02 ml 20% 200V
C417	03 018 570	Cap F Pa .02 ml 20% 600V
C418	03 018 570	Cap F Pa .02 ml 20% 600V
C419	03 010 010	Cap F E 25 ml 25V
C420	03 010 020	Cap F Pa .03 ml 20% 200V
C421	03 014 900	Cap F Pa .01 ml 20% 200V
C422	03 010 000	Cap F Pa .02 ml 20% 600V
C423	03 011 390	Cap F Pa .02 ml 20% 600V
C424	03 101 550	Cap F Pa .02 ml 20% 600V
C425	03 100 230	Cap F Pa .002 ml 600V
C426	03 018 650	Cap F Pa .002 ml 600V
C427	03 100 190	Cap F Pa .005 ml 600V
C428	03 018 620	Cap F Pa .005 ml 600V
C429	03 100 210	Cap F Pa .05 ml 20% 600V
C430	03 015 370	Cap F Pa .05 ml 20% 600V
C431	03 100 250	Cap F Pa .002 ml 600V
C432	03 018 650	Cap F Pa .002 ml 600V
C433	03 100 190	Cap F Pa .005 ml 600V
C434	03 013 910	Cap F Pa .1 ml 20% 200V
C435	12 001 310	Pilot Lamp .15 amp 6.3V
C436	12 001 310	Pilot Lamp .15 amp 6.3V
C437	09 015 560	Connector female 2 contact, A.C. to Phono
C438	09 015 560	Connector female 2 contact, A.C. to Main Chassis
C439	09 018 881	Connector female 5 contact, Speaker

J404	09 002 760	Connector female 1 contact, Audio from Main Chassis
L401	21 004 321	Antenna Coil Assy
L402	21 004 311	Oscillator Coil Assy
L403	21 007 261	Choke, Filter
P401	50 002 980	Cable Assy Power
R401	02 032 580	Res F C 470K 20% 1/4W
R402	02 042 580	Res F C 22K 20% 1/4W
R403	02 052 580	Res F C 10 meg 20% 1/4W
R404	02 032 580	Res F C 22K 20% 1/4W
R405	02 042 580	Res F C 10 meg 20% 1/4W
R406	02 032 660	Res F C 1K 20% 1/4W
R407	02 052 430	Res F C 1.5K 20% 1/4W
R408	02 042 430	Res F C 22K 10% 2W
R409	02 052 430	Res F C 1 meg 20% 1/4W
R410	02 042 600	Res F C 47K 10% 1/4W
R411	02 032 520	Res F C 47K 20% 1/4W
R412	02 042 520	Res F C 47K 20% 1/4W
R413	02 032 520	Res F C 47K 20% 1/4W
R414	02 032 520	Res F C 47K 20% 1/4W
R415	02 032 520	Res F C 47K 20% 1/4W
R416	02 032 520	Res F C 47K 20% 1/4W
R417	02 032 520	Res F C 47K 20% 1/4W
R418	02 032 520	Res F C 47K 20% 1/4W
R419	02 032 520	Res F C 47K 20% 1/4W
R420	02 032 520	Res F C 47K 20% 1/4W
R421	02 032 520	Res F C 47K 20% 1/4W
R422	02 032 520	Res F C 47K 20% 1/4W
R423	02 032 520	Res F C 47K 20% 1/4W
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R425	02 032 520	Res F C 47K 20% 1/4W
R426	02 032 520	Res F C 47K 20% 1/4W
R427	02 032 520	Res F C 47K 20% 1/4W
R428	02 032 520	Res F C 47K 20% 1/4W
R429	02 032 520	Res F C 47K 20% 1/4W
R430	02 032 520	Res F C 47K 20% 1/4W
R431	02 032 520	Res F C 47K 20% 1/4W
R432	02 032 520	Res F C 47K 20% 1/4W
R433	02 032 520	Res F C 47K 20% 1/4W
R434	02 032 520	Res F C 47K 20% 1/4W
R435	02 032 520	Res F C 47K 20% 1/4W
R436	02 032 520	Res F C 47K 20% 1/4W
R437	02 032 520	Res F C 47K 20% 1/4W
R438	02 032 520	Res F C 47K 20% 1/4W
R439	02 032 520	Res F C 47K 20% 1/4W
R440	02 032 520	Res F C 47K 20% 1/4W
R441	02 032 520	Res F C 47K 20% 1/4W
R442	02 032 520	Res F C 47K 20% 1/4W
R443	02 032 520	Res F C 47K 20% 1/4W
R444	02 032 520	Res F C 47K 20% 1/4W
R445	02 032 520	Res F C 47K 20% 1/4W
R446	02 032 520	Res F C 47K 20% 1/4W
R447	02 032 520	Res F C 47K 20% 1/4W
R448	02 032 520	Res F C 47K 20% 1/4W
R449	02 032 520	Res F C 47K 20% 1/4W
R450	02 032 520	Res F C 47K 20% 1/4W
R451	02 032 520	Res F C 47K 20% 1/4W
R452	02 032 520	Res F C 47K 20% 1/4W
R453	02 032 520	Res F C 47K 20% 1/4W
R454	02 032 520	Res F C 47K 20% 1/4W

R455	01 054 100	Res V C 500K SPST
R456	02 031 970	Res F C 47K 10% 1/4W
R457	02 041 970	Res F C 33K 20% 1/4W
R458	02 051 970	Res F C 33K 20% 1/4W
R459	02 042 510	Res F C 470K 20% 1/4W
R460	02 052 510	Res V C 500K 20% 1/4W
R461	01 029 310	Res F C 47K 10% 1/4W
R462	02 031 970	Res F C 22K 20% 1/4W
R463	02 051 970	Res F C 47K 10% 1/4W
R464	02 031 970	Res F C 47K 10% 1/4W
R465	02 031 970	Res F C 47K 10% 1/4W
R466	02 031 970	Res F C 47K 10% 1/4W
R467	02 031 970	Res F C 47K 10% 1/4W
R468	02 031 970	Res F C 47K 10% 1/4W
R469	02 031 970	Res F C 47K 10% 1/4W
R470	02 031 970	Res F C 47K 10% 1/4W
R471	02 031 970	Res F C 47K 10% 1/4W
R472	02 031 970	Res F C 47K 10% 1/4W
R473	02 031 970	Res F C 47K 10% 1/4W
R474	02 031 970	Res F C 47K 10% 1/4W
R475	02 031 970	Res F C 47K 10% 1/4W
R476	02 031 970	Res F C 47K 10% 1/4W
R477	02 031 970	Res F C 47K 10% 1/4W
R478	02 031 970	Res F C 47K 10% 1/4W
R479	02 031 970	Res F C 47K 10% 1/4W
R480	02 031 970	Res F C 47K 10% 1/4W
R481	02 031 970	Res F C 47K 10% 1/4W
R482	02 031 970	Res F C 47K 10% 1/4W
R483	02 031 970	Res F C 47K 10% 1/4W
R484	02 031 970	Res F C 47K 10% 1/4W
R485	02 031 970	Res F C 47K 10% 1/4W
R486	02 031 970	Res F C 47K 10% 1/4W
R487	02 031 970	Res F C 47K 10% 1/4W
R488	02 031 970	Res F C 47K 10% 1/4W
R489	02 031 970	Res F C 47K 10% 1/4W
R490	02 031 970	Res F C 47K 10% 1/4W
R491	02 031 970	Res F C 47K 10% 1/4W
R492	02 031 970	Res F C 47K 10% 1/4W
R493	02 031 970	Res F C 47K 10% 1/4W
R494	02 031 970	Res F C 47K 10% 1/4W
R495	02 031 970	Res F C 47K 10% 1/4W
R496	02 031 970	Res F C 47K 10% 1/4W
R497	02 031 970	Res F C 47K 10% 1/4W
R498	02 031 970	Res F C 47K 10% 1/4W
R499	02 031 970	Res F C 47K 10% 1/4W
R500	02 031 970	Res F C 47K 10% 1/4W

V460	25 000 110	Tube Elec 6SN7-GT
V461	25 000 090	Tube Elec 6V6-GT/G
V462	25 000 220	Tube Elec 5Y3GT
V463	20 004 045	Transformer AM IF
V464	20 004 046	Transformer AM IF
V465	12 003 922	Dial Light Assembly
V466	30 006 300	Dial Cord 38" L
V467	30 009 601	Spring, Dial Cord
V468	30 013 010	Ring Retainer 3/16
V469	30 014 951	Pulley
V470	30 014 991	Pulley Assembly
V471	30 017 000	Shaft Assembly
V472	31 015 631	Chassis
V473	34 001 220	Socket, Tube, 7 pin min
V474	34 002 380	Socket, Tube, Octal
V475	36 001 990	Clip Banding
V476	37 002 270	Clamp Tube
V477	38 000 680	Grommet Rubber
V478	38 001 200	Grommet Rubber
V479	41 001 311	Insulator, Sheet
V480	42 003 150	Shield Light
V481	43 001 210	Eushing Spacer
V482	45 002 061	Dial
V483	45 002 211	Pointer Dial
V484	45 002 261	Dial Mounting Plate Assembly

MAIN CHASSIS Differences Between RA113 and RA-120

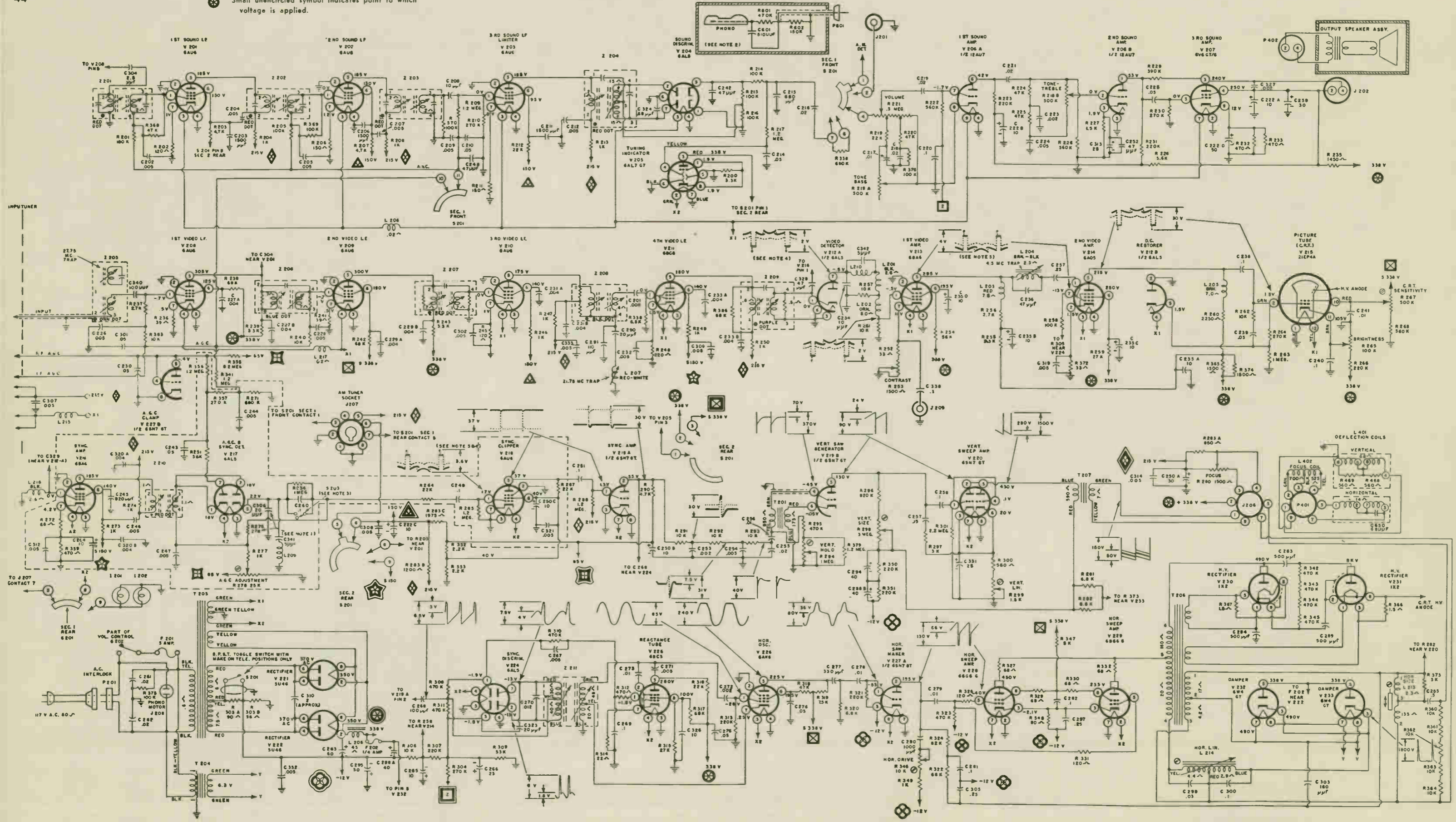
Delete:	C218	Cap F Pa .01 ml 20% 400V
C211	03 012 560	Cap F Pa .01 ml 20% 600V
C212	03 001 570	Cap F Pa .005 ml 25% 600V
C216	03 018 730	Cap F E 10 ml 25V
C280	03 018 450	Cap F E 30/10/10 ml
C270	03 020 210	Cap F M 688 mmf 10% 300V
C276	03 020 380	Cap F M 27 mmf 10% 500V
C286	03 014 900	Cap F Pa .01 ml 20% 200V
C288	03 100 020	Cap F Pa .08 ml 20% 200V
C289	03 100 020	Cap F Pa .08 ml 20% 200V

C360	03 015 300	Cap F Ca 47 mmf 10% 500V
C369	03 015 300	Cap F Ca 47 mmf 10% 500V
E301	09 018 561	Connector Assembly Speaker
L307	21 007 241	Coil, Choke
R313	02 032 660	Res F C 10 meg 20% 1/4W
R314	02 042 660	Res V C 50K-1 meg 30% 1/4W
R315	01 029 210	SPST
R316	02 032 070	Res F C 330K 10% 1/4W
R317	02 032 070	Res F C 330K 10% 1/4W
R318	02 032 070	Res F C 330K 10% 1/4W
R319	02 032 070	Res F C 330K 10% 1/4W
R320	02 032 070	Res F C 330K 10% 1/4W
R321	02 032 070	Res F C 330K 10% 1/4W
R322	02 032 070	Res F C 330K 10% 1/4W
R323	02 032 070	Res F C 330K 10% 1/4W
R324	02 032 070	Res F C 330K 10% 1/4W
R325	02 032 070	Res F C 330K 10% 1/4W
R326	02 032 070	Res F C 330K 10% 1/4W
R327	02 032 070	Res F C 330K 10% 1/4W
R328	02 032 070	Res F C 330K 10% 1/4W
R329	02 032 070	Res F C 330K 10% 1/4W
R330	02 032 070	Res F C 330K 10% 1/4W
R331	02 032 070	Res F C 330K 10% 1/4W
R332	02 032 070	Res F C 330K 10% 1/4W
R333	02 032 070	Res F C 330K 10% 1/4W
R334	02 032 070	Res F C 330K 10% 1/4W
R335	02 032 070	Res F C 330K 10% 1/4W
R336	02 032 070	Res F C 330K 10% 1/4W
R337	02 032 070	Res F C 330K 10% 1/4W
R338	02 032 070	Res F C 330K 10% 1/4W
R339	02 032 070	Res F C 330K 10% 1/4W
R340	02 032 070	Res F C 330K 10% 1/4W
R341	02 032 070	Res F C 330K 10% 1/4W
R342	02 032 070	Res F C 330K 10% 1/4W
R343	02 032 070	Res F C 330K 10% 1/4W
R344	02 032 070	Res F C 330K 10% 1/4W
R345	02 032 070	Res F C 330K 10% 1/4W
R346	02 032 070	Res F C 330K 10% 1/4W
R347	02 032 070	Res F C 330K 10% 1/4W
R348	02 032 070	Res F C 330K 10% 1/4W
R349	02 032 070	Res F C 330K 10% 1/4W
R350	02 032 070	Res F C 330K 10% 1/4W
R351	02 032 070	Res F C 330K 10% 1/4W
R352	02 032 070	Res F C 330K 10% 1/4W
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R354	02 032 070	Res F C 330K 10% 1/4W
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R356	02 032 070	Res F C 330K 10% 1/4W
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R359	02 032 070	Res F C 330K 10% 1/4W
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R363	02 032 070	Res F C 330K 10% 1/4W
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R366	02 032 070	Res F C 330K 10% 1/4W
R367	02 032 070	Res F C 330K 10% 1/4W
R368	02 032 070	Res F C 330K 10% 1/4W
R369	02 032 070	Res F C 330K 10% 1/4W
R370	02 032 070	Res F C

Large encircled symbol indicates source of voltage.

Small unencircled symbol indicates point to which voltage is applied.

RA-130A MAIN CHASSIS



MODEL RA-130A MAIN CHASSIS PARTS LIST

AM TUNER PARTS LIST

Sherbrooke RA-130A

Table with columns: Symbol, Part No., Description. Lists various components like capacitors, inductors, and tubes for the Sherbrooke RA-130A AM tuner.

RF TUNING ASSEMBLY PARTS LIST

Table with columns: Symbol, Part No., Description. Lists components for the RF tuning assembly, including input tuner assembly parts.

Table with columns: Part No., Description. Continuation of parts list for the Sherbrooke RA-130A, listing various electronic components.

Table with columns: Part No., Description. Continuation of parts list for the Sherbrooke RA-130A, listing various electronic components.

Table with columns: Part No., Description. Continuation of parts list for the Sherbrooke RA-130A, listing various electronic components.

Table with columns: Part No., Description. Continuation of parts list for the Sherbrooke RA-130A, listing various electronic components.

Table with columns: Part No., Description. Continuation of parts list for the Sherbrooke RA-130A, listing various electronic components.

Whitehall Series II

Table with columns: Part No., Description. Lists components for the Whitehall Series II, including various electronic parts.

Sherbrooke

Table with columns: Part No., Description. Lists components for the Sherbrooke series, including various electronic parts.

ABBREVIATIONS USED:

Table defining abbreviations: C (Composition), Cap (Capacitor), Cr (Ceramic), E (Electrolytic), Elec (Electronic), F (Fixed), M (Mica), Pa (Paper), Res (Resistor), W (Wire Wound), V (Variable).

Whitehall Series II and Sherbrooke

Table with columns: Part No., Description. Lists components for the Whitehall Series II and Sherbrooke series, including various electronic parts.

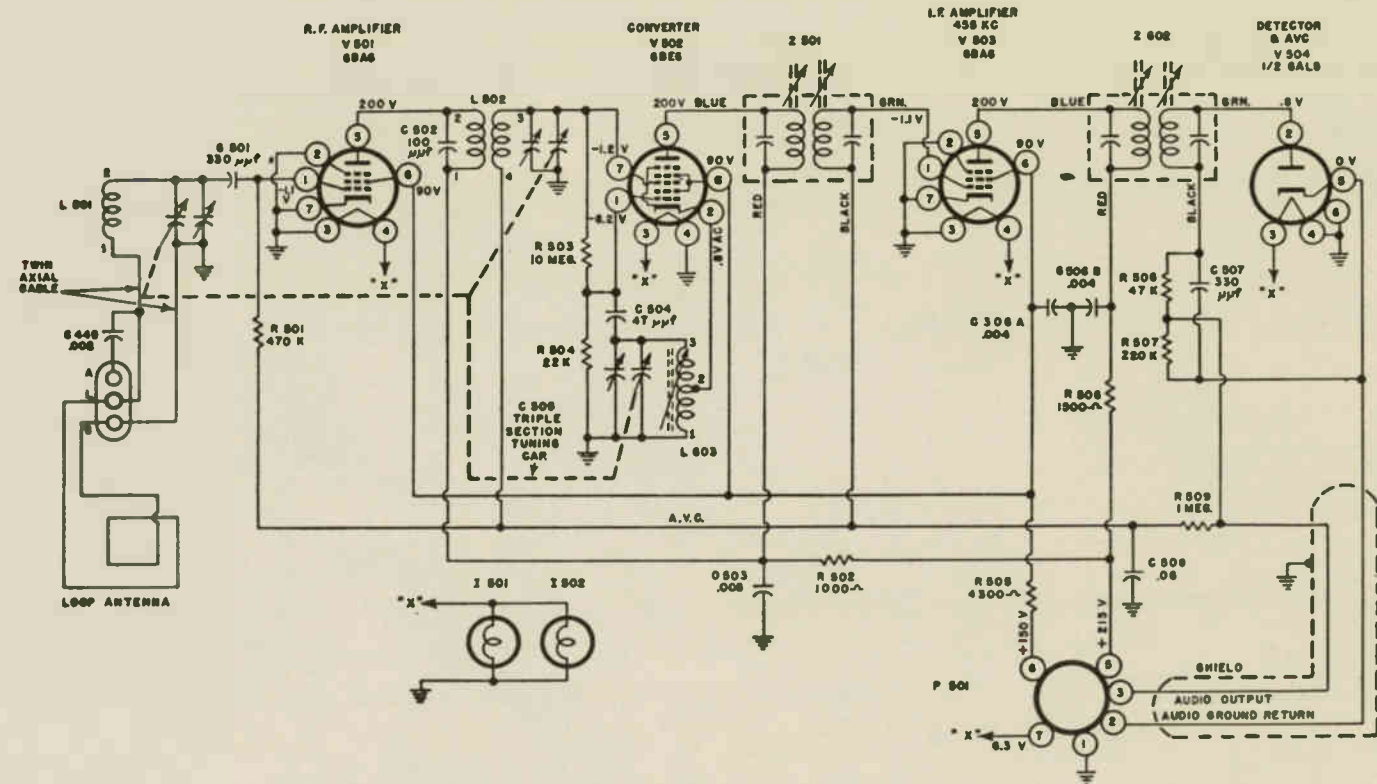
TYPICAL RESISTANCE READINGS

Tuner plugged into main chassis
 Service Selector switch in AM position
 RCA Model WV97A VoltOhmyst used in making these measurements
 All readings in ohms unless otherwise stated.
 M = Million K = Thousand

Tube	1	2	3	4	5	6	7
V501	1.5M	0	0	0.1	8K*	10.5K*	0
V502	22K	0.6	0.1	0	8K*	10.5K*	1.0M
V503	1.0M	0	0	0.1	8.5K*	10.5K*	0
V504	0	350K	0.1	0	0	0	0

* Readings at pins No. 5 and 6 were observed after the capacity in the circuit was charged.

RA-130A AM TUNER



**RESISTANCE MEASUREMENTS — ALL READINGS TO GROUND
 RA-130A CHASSIS**

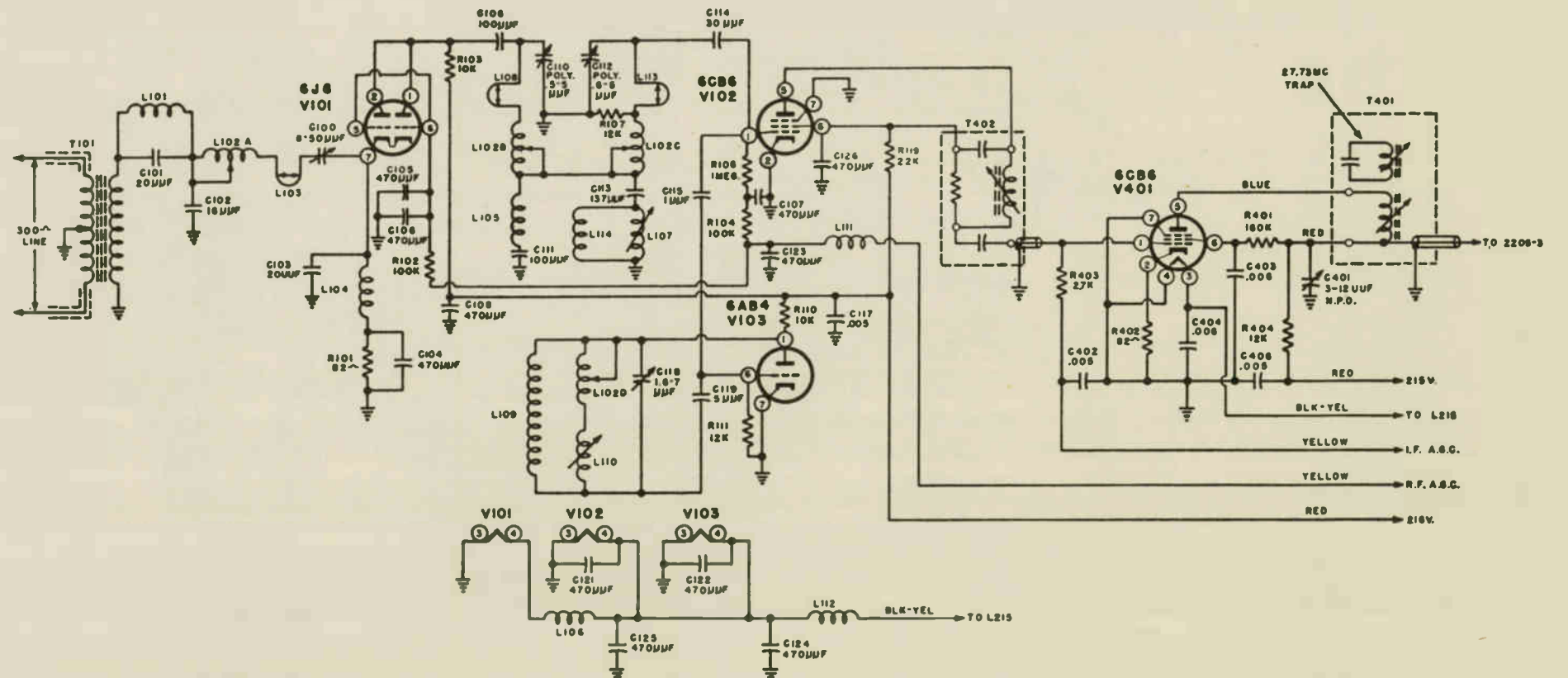
TUBE	1	2	3	4	5	6	7	8
V201	1.7M	0	.1	0	7.4K	10K	120	
V202	1.7M	0	.1	0	7.4K	10K	150	
V203	270K	0	.1	0	7.4K	28K	150	
V204	0	100K	.1	0	200K	0	100K	
V205	3.3K	.1	7.5K	1.5M	0	0	0	3.3K
*V206	150K	520K	1.5K	0	0	260K	850K	0
V207	0	0	9K	8.6K	270K		.1	285
V208	1.5M	0	0	.05	11K	75K	39	
V209	1.5M	0	0	.05	11K	75K	39	
V210	.7	0	0	.05	9K	6.5K	120	
V211	6.8K	0	0	.05	8K	6.3K	220	
V212	.5	0	0	.05	1M	0	5.2K	
V213	5.2K	0	0	.05	13.5K	70K	23-1.5K	
V214	110K	33	.05	0	10.5K	86K	110K	
**V215	0	1.3M						
V216	2.6	0	0	.1	7.3K	6.4K	538	
V217	1K-8K	1K-8K	0	.1	80K-87K	0	1M	
V218	1.2M	0	0	.1	24.2K	2.2K	0	
V219	1.2M	8.4K	0	470K-1M	1.2M-5.5M	175	.05	0
V220	2.2M	480K	560-2.1K	2.2M	480K	560-2.1K	.05	0
V221		7.5K		64	64	64	7.5K	
V222		7.5K		64	64	64	7.5K	
V224	1M	500K	0	.05	38K	0	500K	
V225	1.5M	22	0	.05	38K	20K	22	
V226	220K	0	.05	0	15K	55K	20	
V227	220K	550K	56	1.8M	1.8M	0	0	.05
*V228	0	140	500K	500K	500K	0	.05	12.5K
**V229	.05	140	12.5K	500K	500K	500K	0	12.5K
†V230	INF.	INF.	INF.					INF.
††V231	INF.	INF.	INF.					INF.
V232					7.4K		450K	450K
V233					7.4K		450K	450K

**V215	10	11	12	Pin #9	*V206	†V230	#V231
	8K-240K	0-70K	.1		1	INF.	
Cap		*V228	**V229	†V230	#V231		
		450K	450K	450K	INF.		

Selector switch in "Television Light On" position.
 Instrument Used — RCA Model WV97A VoltOhmyst (for voltage and resistance)
 All readings in ohms K = thousand M = million
 Two readings for a given point indicate an adjustable resistance is in the measured circuit.

INPUT TUNER

89003041



ALIGNMENT TABLE RA-109A FAS — RA-130A

Remove the following tubes: Tuner Oscillator V103 (6J6), Audio Amplifier V207 (6V6GT) and Horizontal Oscillator V226 (6AK6). Remove F202 deflection amplifier protection fuse. Adjust AGC control (R278) fully counter-clockwise. Turn Selector Switch in TV position.

Step	Signal Generator		Oscillograph	Adjust	Waveform	Remarks
	Frequency	Connect to				
1	24 mc. center frequency 10 mc. deviation	Pin 1-V211 4th V.I.F. Amp. ①	Junction of L201 L202 and R257 IDIR.	Z209—Top and bottom slugs and bandpass cap.		Use two alignment tools simultaneously. Push bandpass cap. wire in to increase bandpass and pull out to decrease.
2	28 mc. center frequency 5 mc. deviation	As above ②	Pin 1-V218 1st Sync Clipper 2DIR.	Z210—Top and bottom slugs		Remove V218. Use 6AU6 with pin 3 clipped and lead tied to pin 1 for scope connection.
3	21.75 mc. 400 cps AM No Sweep	Pin 1-V210 3rd V.I.F. Amp. ③	Junction of L201 L202 and R257 3DIR.	L207	Minimum scope indication.	Use high generator output and high scope gain. Be careful to avoid overload.
4	24 mc. center frequency 10 mc. deviation	As above ④	Pin 5-V211 4th V.I.F. Amp. 4XTAL	Z208—Top and bottom slugs		L207 adjustment affects waveform's low frequency side.
5	As above	Pin 1-V209 2nd V.I.F. Amp. ⑤	Pin 5-V210 3rd V.I.F. Amp. 5XTAL	Z207—Top and bottom slugs and bandpass cap.		
6	22 mc. center frequency 2 mc. deviation	Pin 1-V202 2nd S.I.F. Amp. ⑥	Pin 5-V203 3rd S.I.F. Limiter 6XTAL	Z203—Top and bottom slugs		Selector Switch in FM position.
7	As above	Pin 1-V201 1st S.I.F. Amp. ⑦	Pin 5-V202 2nd S.I.F. Amp. 7XTAL	Z202—Top and bottom slugs	As above	As above
8	As above	Pin 1-V208 1st V.I.F. Amp. ⑧	Pin 5-V203 3rd S.I.F. Limiter 8XTAL	Z201—Top and bottom slugs		Connect 100K pot between "W" and ground, arm to "X". Adjust for -5 volts bias.
9	As above	As above ⑨	Junction of R214 and C215 9DIR.	Z204—Top slug for waveform, bottom slug for maximum amplitude.		As above
10	24 mc. center frequency 10 mc. deviation	As above ⑩	Pin 5-V209 2nd V.I.F. Amp. 10XTAL	Z206—Top and bottom slugs and bandpass cap. Z201 Top slug		Selector switch in TV position. Dip in curve may be eliminated by removing V401. Z201 Top slug affects the 21.75 mc dip.
11	27.75 mc. 400 cps AM No Sweep	Pin 1-V401 IF. Amp. See Figure 1 11XTAL	As above	T401 and Z205 Top slugs	Minimum scope indication.	Use V401 with lead tied to pin 1 for signal injection. Adjust T401 with special alignment tool #69000230.
12	24 mc. center frequency 10 mc. deviation	As above 12XTAL	Pin 5-V208 1st V.I.F. Amp. 12XTAL	T401 and Z205 bottom slugs and C401		As above C401 affects bandpass.
12A	As above	Pin 1-V102 Mixer ⑫	As above 12XTAL	T402 bottom slug		Use V102 with lead tied to pin 1 for signal injection. Adjust T402 with special alignment tool #69000230.
13	4.5 mc. 400 cps AM	Pin 7-V212 Video Detector ⑬	Junction of R264 R266 and C238 13XTAL	L204	Minimum scope indication.	Frequency must be accurate. Use crystal oscillator or crystal calibrated signal.
14	TV Station transmitting test pattern.	Connect a VTVM to the junction of L201, L202 and R257 14VTVM		R278 AGC control for 3 volt DC reading.		Adjust R278 on strongest station to prevent overload.
15	As above			C401 Z205 bottom slug, 1/2 turn. Z209 bottom slug, 1/2 turn.		To correct for smear in the picture.

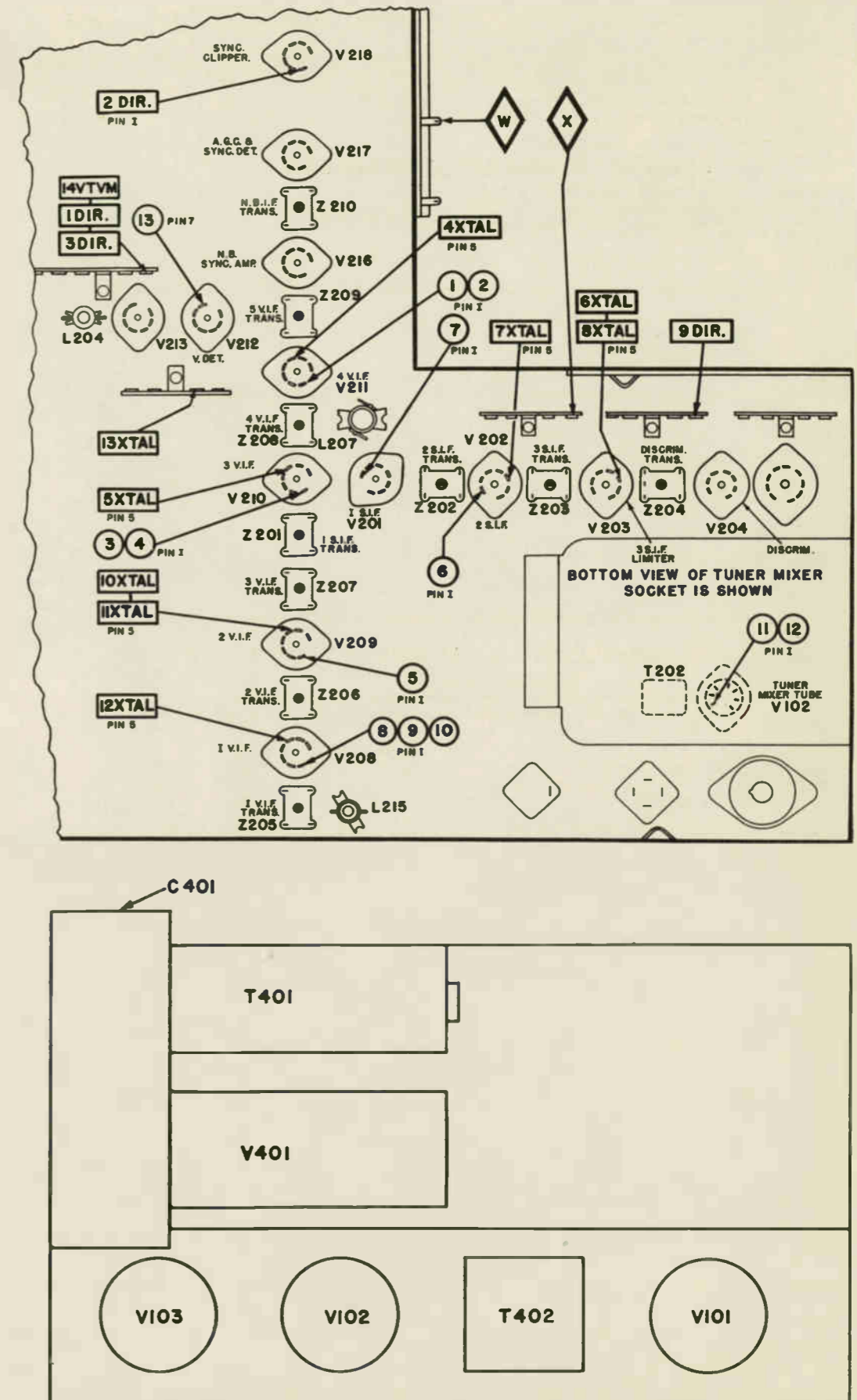


FIGURE 1
Top View of the RA109A FAS and RA130A Tuner.

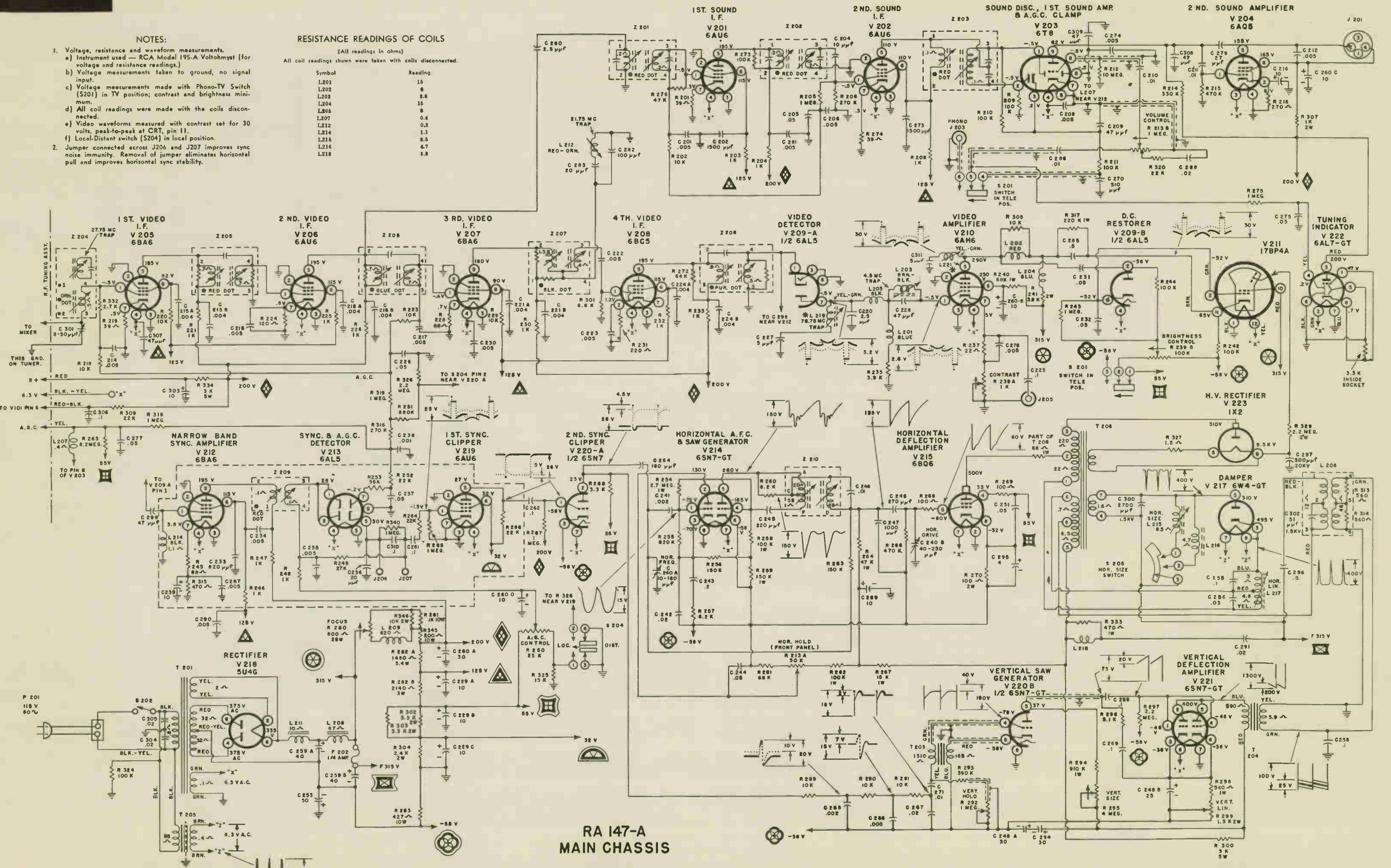
NOTES:

- 1. Voltage, resistance and waveform measurements.
 - e) Instrument used — RCA Model 195-A VoltOhmyst (for voltage and resistance readings.)
 - b) Voltage measurements taken to ground, no signal input.
 - c) Voltage measurements made with Phono-TV Switch (S201) in TV position; contrast and brightness minimum.
 - d) All coil readings were made with the coils disconnected.
 - e) Video waveforms measured with contrast set for 30 volts, peak-to-peak at CRT, pin 11.
 - f) Local-Distant switch (S204) in local position.
2. Jumper connected across J206 and J207 improves sync noise immunity. Removal of jumper eliminates horizontal pull and improves horizontal sync stability.

RESISTANCE READINGS OF COILS

(All readings in ohms)
All coil readings shown were taken with coils disconnected.

Symbol	Reading
L201	15
L202	8
L203	8.6
L204	16
L205	8
L207	0.4
L212	0.2
L214	1.1
L216	8.5
L218	4.7
L218	3.8



RA 147-A
MAIN CHASSIS

RESISTANCE MEASUREMENTS — ALL READINGS TO GROUND
RA-147A CHASSIS

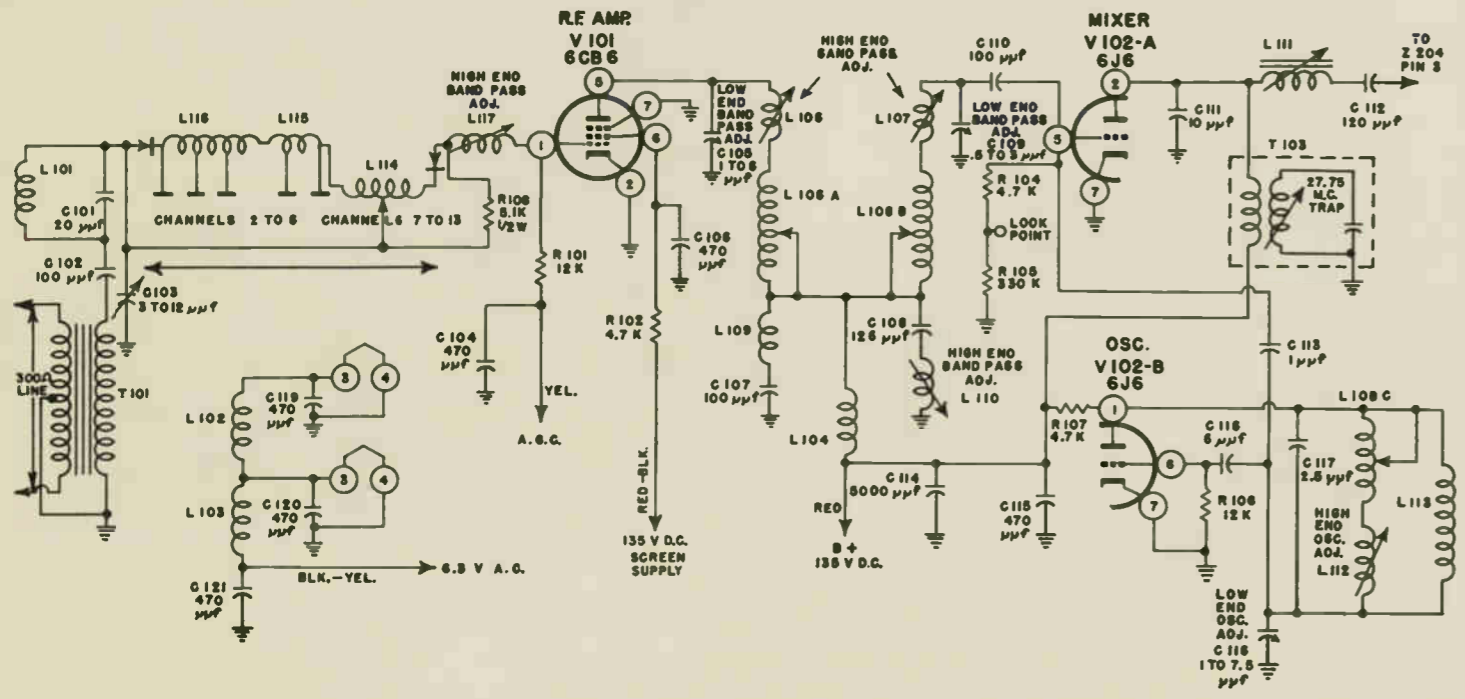
Table with 8 columns (TUBE, 1, 2, 3, 4, 5, 6, 7, 8) and rows for various tube types (V201, V202, V203, etc.) showing resistance values in Ohms, K, M, and F.

Rear selector switch in "TV" position.
Instrument used—RCA Model 105-A Volt Ohm meter.
All readings in ohms—K = thousand, M = million.
Two readings for a given point indicate an adjustable resistance in the measured circuit.

RF ASSEMBLY PARTS LIST
89002991

Table with 4 columns: Symbol No., Part No., Description, and another Symbol No. with Part No. and Description. Lists various RF components like capacitors, inductors, and transformers.

R.F. ASSEMBLY
(FOUR CIRCUIT INPUTER)



RECEIVER PARTS LIST RA-147A

ABBREVIATIONS USED: Table with 4 columns: Symbol, Composition, M, Mica. Lists abbreviations for Cap, C, Ce, E, Elec, F.

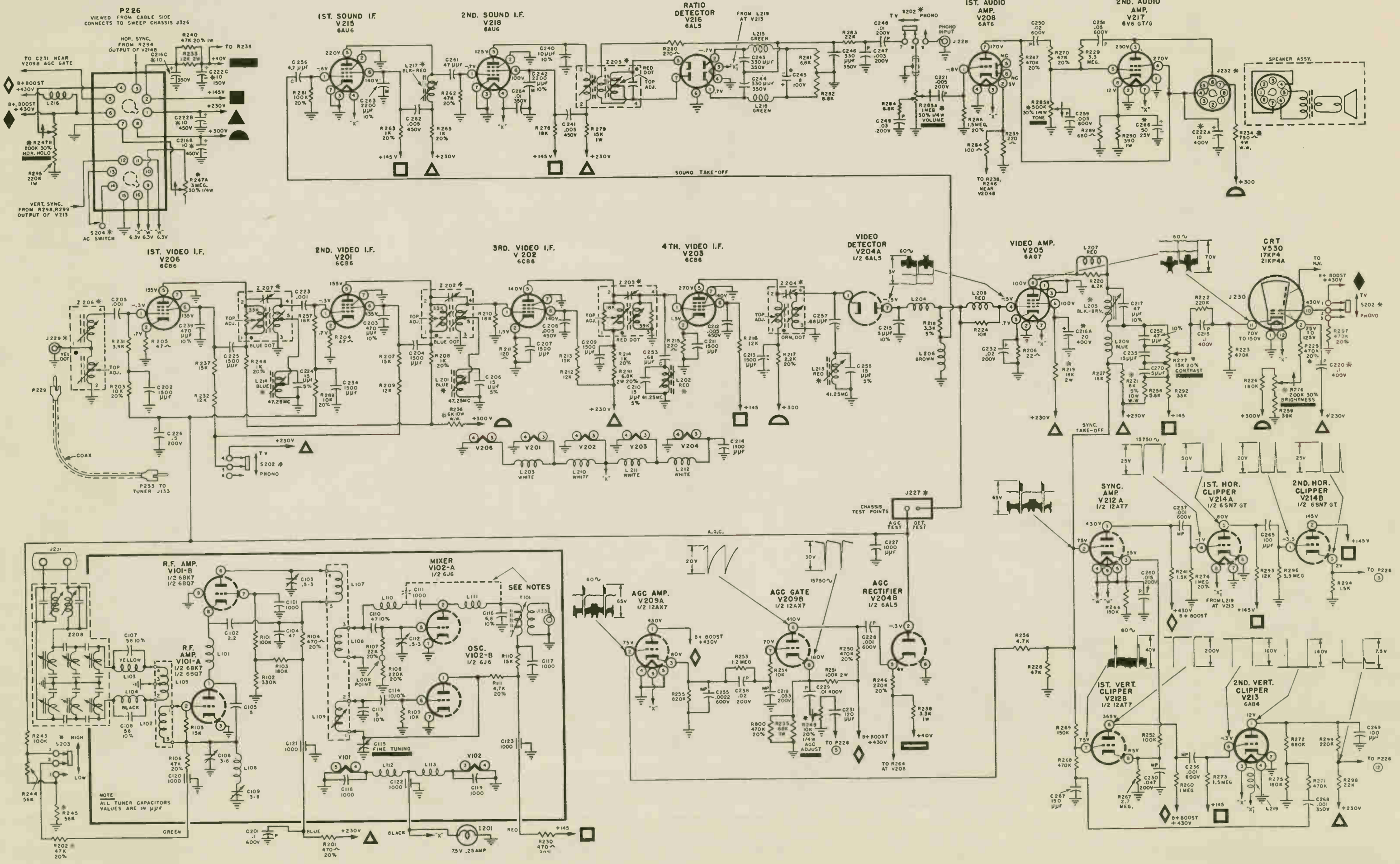
Table with 3 columns: Symbol No., Part No., Description. Lists various electronic components and their specifications.

Table with 4 columns: Symbol No., Part No., Description, and another Symbol No. with Part No. and Description. Lists a wide variety of receiver parts including capacitors, inductors, transformers, and mechanical components.

MISCELLANEOUS PARTS LIST RA-147A

Table with 4 columns: Symbol No., Part No., Description, and another Symbol No. with Part No. and Description. Lists miscellaneous parts like connectors, interlocks, and tuning components.

RA-160 RA-162 RA-162B SIGNAL CHASSIS



RESISTANCE MEASUREMENTS
All Readings to Ground Signal Chassis

	1	2	3	4	5	6	7	8	9
V201	220K	47	0.2	0	20K	40K	0		
V202	0.1	120	0.1	0	20K	40K	0		
V203	0.2	220	0.2	0	14K	23K	0		
V204	0.2	200K	0.3	0	280K	0	3.3K		
V205	0	0	0	3.3K	22	32K	0.1	15K	
V206	220K	47	0.3	0	20K	40K	0		
V208	1.5M	220	0.1	0	NC	NC	470K		
V209	85K	25K	820K	0	0	550K	2Meg	60K	0.1
V212	65K	20K	180K	180K	180K	1M	180K	260K	180K
V213	200K	NC	.1	0	NC	1.5 Meg	0		
V214	3.9Meg	10K	1.5K	1M	22K	0	0	.1	
V215	100K	0	0	.1	10K	8.5K	0		
V218	6.8K	6.8K	.1	0	INF	0	INF		
V217	0	0	13K	13K	500K	550K	.1	250	
V216	47K	0	0	.1	30K	30K	0		
V530	0	470K							
		500K							
								65K	170K
									.1

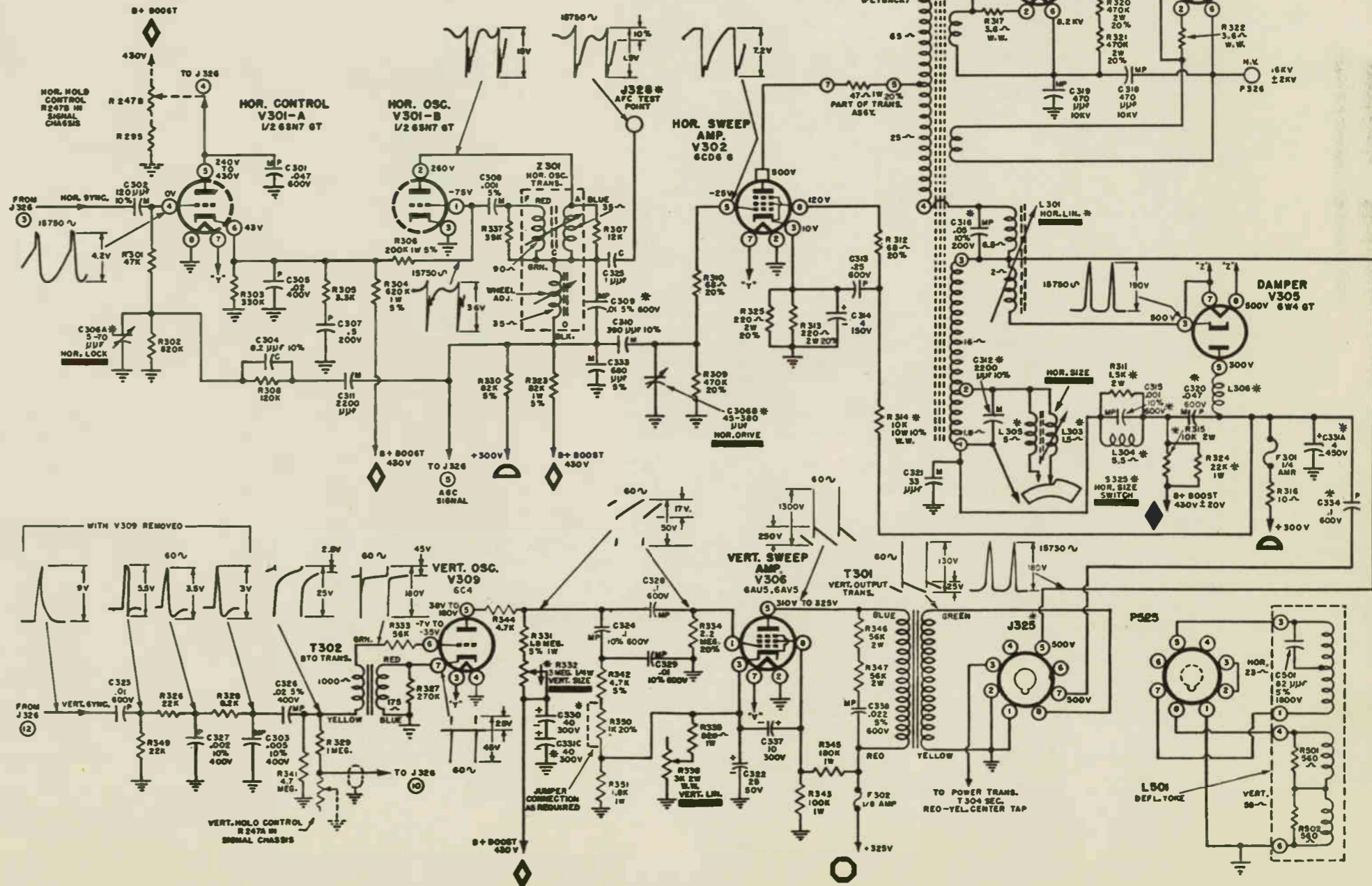
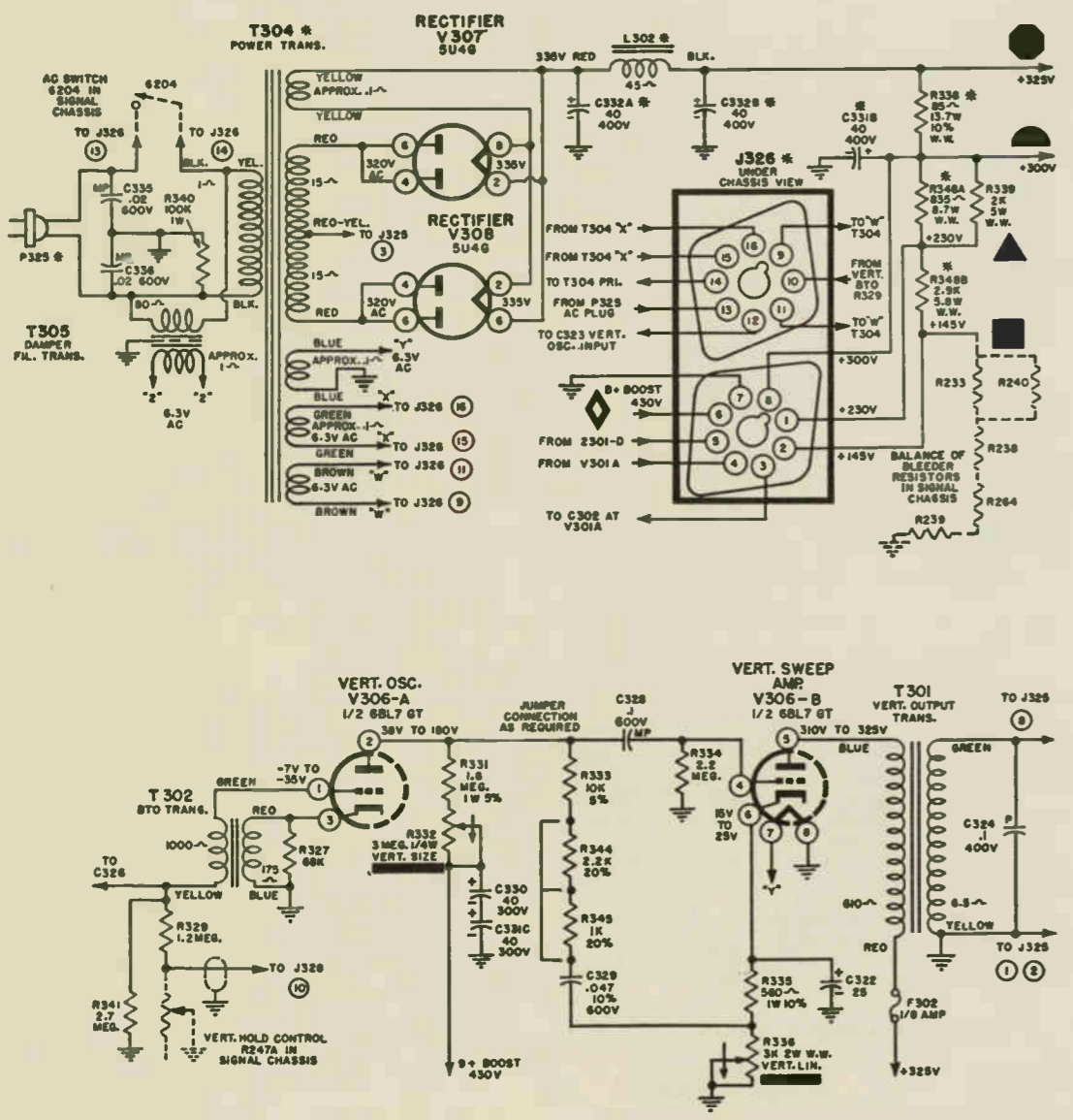
The above resistance readings were taken with an RCA Model WV97A VTVM with the TV-Phone switch in the TV position. All readings are in ohms, K = 1000, M = million. When the reading is effected by a control two readings are given. These readings indicate the variation produced by the control.

RESISTANCE MEASUREMENTS
All Readings to Ground Sweep Chassis

	1	2	3	4	5	6	7	8	9	CAP
V301	450K	65K	0	1Meg	63-120K	220K	0.1	0		
V302	NC	0	110	NC	470K	22K	0.1	22K	NC	70K
V303	INF	INF	NC	NC	NC	INF	INF	NC	NC	70K
V304	INF	INF	NC	NC	NC	INF	INF	NC	NC	
V305	NC	NC	70K		12K			70K	70K	
V306	2.2Meg	0	550-1.2K	NC	12K	NC	.1	65K		
V307	NC	12K	NC	15	NC	15	NC	12K		
V308	NC	12K	NC	15	NC	15	NC	12K		
V309	NC	NC	0	.1	1.8Meg	1Meg	175			
					5.5Meg	2.5Meg				

The above resistance readings were taken with an RCA Model WV97A VTVM with the TV-Phone switch in the TV position. All readings are in ohms, K = 1000, M = million. When the reading is effected by a control two readings are given. These readings indicate the variation produced by the control.

RA-160 RA-162 RA-162B SWEEP CHASSIS



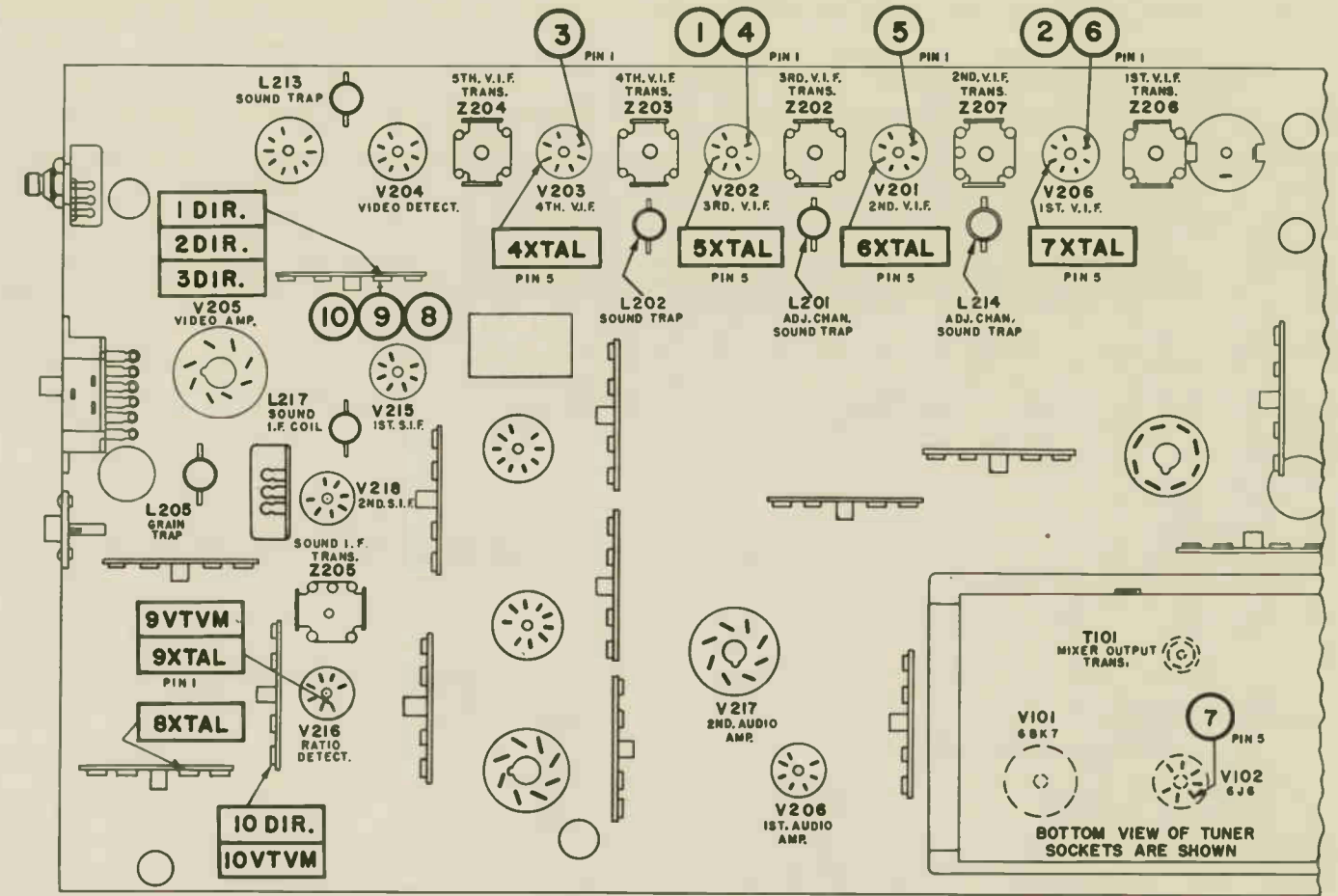
VIDEO IF ALIGNMENT RA-160 - RA-162

Before beginning alignment, remove the high-voltage fuse F301 on Sweep Chassis and the Mixer-Oscillator Tube V102 (6J6) on Tuner.

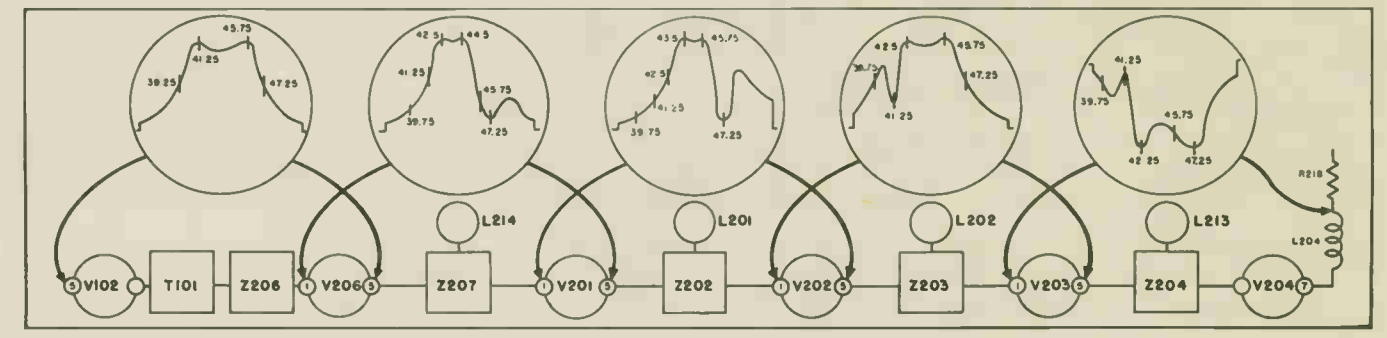
Step	Signal Generator		Oscillograph	Adjust	Waveform	Remarks
	Frequency	Connect to				
1	41.25 mc. 400 cps AM No sweep	Pin 1 - V202 ①	Junction L204 and R218 1DIR.	L202 L213	Minimum scope indication	Use high generator output and low scope gain. Be careful to avoid overload.
2	47.25 mc. 400 cps AM No sweep	Pin 1 - V206 ②	Junction L204 and R218 2DIR.	L201 L214	As above	As above
3	43.5 mc. center frequency 10 mc. deviation (min.)	Pin 1 - V203 ③	Junction L204 and R218 3DIR.	Z204 - top and bottom slugs, and bandpass cap.		Use high scope gain and reduce generator output. Recheck L213 (41.25 mc. dip in curve).
4	As above	Pin 1 - V202 ④	Pin 5 - V203 4XTAL	Z203 - top and bottom slugs and bandpass cap.		Recheck L202 (41.25 mc. dip in curve).
5	As above	Pin 1 - V201 ⑤	Pin 5 - V202 5XTAL	Z202 - top and bottom slugs and bandpass cap.		Recheck L201 (47.25 mc. dip in curve).
6	As above	Pin 1 - V206 ⑥	Pin 5 - V201 6XTAL	Z207 - top and bottom slugs and bandpass cap.		Remove V202. Recheck L214 (47.25 mc. dip in curve).
7	As above	Pin 5 - V102 ⑦	Pin 5 - V206 7XTAL	Z206 - bottom slug, T101 on tuner. Z206 top for bandpass		Remove V201. Replace original 6J6 (V102) with lead tied to pin 5 for signal injection. Remove one oscillator strip from tuner and tune to this channel.
8	4.5 mc. 400 cps AM	Junction of R204 & R218 ⑧	Junction of R223 & R222 8XTAL	L205	Minimum scope indication	Frequency must be accurate. Use crystal oscillator or crystal calibrated signal.

SOUND ALIGNMENT

9	4.5 mc. approx. 1/2 mc. sweep	Junction L204 & R218 ⑨	Pin 1 - V216 9XTAL	Z205 - bottom slug, L217		Avoid overload.
10	As above	Junction L204 & R218 ⑩	Junction of R283 & C248 10DIR.	Z205 - top slug		As above.



SPEED ALIGNMENT CHART



ALTERNATE SOUND ALIGNMENT METHOD USING TV SIGNAL				
Step	Signal Source	VTVM	Adjust	Remarks
9	TV Signal	Pin 1 - V216 9VTVM	Z205 - bottom slug and L217 for max. positive voltage indication	Teleset must be tuned to a TV station.
10	TV Signal	Junction of R283 & C248 10VTVM	Z205 - top slug for zero voltage indication	As above.

ALIGNMENT NOTES

- The chassis and instruments should be bonded together and connected to a common ground.
- Terminate the generator output cable with the resistance recommended by the manufacturer of the instrument.
- Use the full gain of the oscillograph and the lowest generator output which will give a satisfactory curve, except when adjusting traps. When adjusting a trap use the highest generator output which does not cause overload and set the oscillograph for satisfactory response.
- Do not adjust the bandpass capacitors until the frequency of each curve has been correctly set using the slug adjustments.
- Use two alignment tools simultaneously (one for the top slug, the other for the bottom slug) to save time.

PARTS LIST

Symbol	Part No.	Symbol	Part No.	Symbol	Part No.	Symbol	Part No.	Symbol	Part No.
C301	03 014 800	C331	03 116 470	R307	02 031 900	R337	02 031 960	V308	25 000 060
C302	03 020 440	C332	03 115 010	R308	02 032 020	R338	02 150 001	V309	25 000 790
C303	03 018 640	C333	03 025 370	R309	02 032 580	R339	02 112 260	Z301	20 007 611
C304	03 117 280	C334	03 019 250	R310	02 032 350	R340	02 035 010	6BL7 CIRCUIT	
C305	03 001 460	C335	03 018 570	R311	02 037 790	R341	02 032 210		
C306	03 114 440	C336	03 018 570	R312	02 032 350	R342	02 030 640		
C307	03 002 190	C337	03 019 320	R313	02 038 380	R343	02 035 010		
C308	03 030 580	C338	03 121 060	R314	02 113 140	R344	02 031 850		
C309	03 101 540	C501	03 119 592	R315	02 037 890	R345	02 035 040		
C310	03 020 500	F301	11 000 720	R316	02 031 530	R346	02 037 980		
C311	03 029 640	F302	11 001 110	R317	02 100 780	R347	02 037 980		
C312	03 029 480	J325	34 003 191	R318	02 038 580	R348	02 216 571		
C313	03 019 190	J328	09 028 921	R319	02 038 580	R349	02 031 930		
C314	03 013 670	J328	09 019 870	R320	02 038 580	R350	02 032 420		
C315	03 115 320	L301	21 007 791	R321	02 038 580	R351	02 034 800		
C316	03 100 350	L302	21 005 218	R322	02 100 780	R501	02 031 740		
C317	03 017 450	L303	21 005 821	R323	02 033 940	R502	02 031 740		
C318	03 017 450	L304	21 007 982	R324	02 034 930	S325	05 003 431		
C319	03 017 450	L305	21 005 811	R325	02 038 380	T301	20 005 497		
C320	03 014 800	L306	21 006 230	R326	02 031 930	T302	20 004 728		
C321	03 020 640	L501	21 009 961	R327	02 032 060	T303	20 006 731		
C322	03 116 750	P325	09 005 000	R328	02 031 880	T304	20 006 883		
C323	03 012 580	P326	50 041 047	R329	02 032 130	T305	20 005 014		
C324	03 101 340	P525	09 015 590	R330	02 030 940	V301	25 000 110		
C325	03 012 150	R301	02 031 970	R331	02 034 260	V302	25 002 910		
C326	03 100 450	R302	02 032 120	R332	01 029 800	V303	25 006 490		
C327	03 014 430	R303	02 032 070	R333	02 031 980	V304	25 006 490		
C328	03 014 820	R304	02 034 150	R334	02 032 620	V305	25 000 830		
C329	03 012 780	R305	02 031 830	R335	02 034 780	V306	25 002 770		
C330	03 116 480	R306	02 034 030	R336	01 024 780	V307	25 000 060		

PARTS LIST

Symbol	Part No.	Symbol	Part No.	Symbol	Part No.	Symbol	Part No.	Symbol	Part No.																				
C201	03 019 250	C264	03 019 650	R228	02 032 040	R286	02 032 480	C118	03 119 190																				
C202	03 017 850	C285	03 016 700	R227	02 031 920	R289	02 031 750	C117	03 100 490																				
C203	03 115 040	C288	03 000 020	R228	02 031 970	R290	02 034 720	C118	03 100 490																				
C204	03 017 850	C267	03 114 980	R229	02 032 190	R291	02 038 470	C119	03 100 490																				
C205	03 015 810	C288	03 015 810	R230	02 032 400	R292	02 031 950	C120	42 006 050																				
C206	03 014 580	C289	03 016 700	R231	02 031 840	R293	02 031 900	C121	42 006 050																				
C207	03 017 850	C270	03 117 330	R232	02 031 900	R294	02 031 790	C122	42 006 050																				
C208	03 015 610	I201	12 001 370	R233	02 037 900	R295	02 035 050	C123	42 006 050																				
C209	03 017 850	J227	09 028 950	R234	02 121 610	R296	02 032 200	J133	09 002 760																				
C210	03 014 580	J228	09 002 760	R235	02 034 990	R297	02 032 580	L101	21 010 400																				
C211	03 017 850	J229	09 002 760	R236	02 113 080	R298	02 031 930	L108	21 010 430																				
C212	03 015 610	J230	34 003 074	R237	02 031 910	R299	02 032 050	L110	21 010 440																				
C213	03 017 850	J231	40 009 980	R238	02 034 830	R800	02 032 580	L111	21 010 450																				
C214	03 017 850	J232	34 002 380	R239	02 031 690	S202	05 005 120	L112	21 010 460																				
C215	03 014 730	L201	21 009 101	R240	02 035 520	S203	05 004 330	L113	21 010 470																				
C216	03 115 030	L202	21 009 091	R241	02 031 790	S204	01 038 800	R101	02 032 010																				
C217	03 015 760	L203	21 008 972	R243	02 032 010	V201	25 002 670	R102	02 032 070																				
C218	03 019 280	L204	21 007 281	R244	02 031 980	V202	25 002 670	R103	02 032 040																				
C219	03 122 280	L205	21 010 131	R245	02 031 980	V203	25 002 670	R104	02 032 400																				
C220	03 019 280	L206	21 006 622	R246	02 032 560	V204	25 000 020	R105	02 031 910																				
C221	03 018 620	L207	21 006 623	R247	01 038 343	V205	25 000 580	R106	02 032 520																				
C222	03 115 020	L208	21 006 623	R248	02 032 420	V206	25 002 670	R107	02 032 500																				
C223	03 015 810	L209	21 006 627	R249	01 029 710	V208	25 000 040	R108	02 032 560																				
C224	03 014 580	L210	21 008 972	R250	02 032 580	V209	25 001 500	R109	02 032 480																				
C225	03 017 850	L211	21 008 972	R251	02 038 010	V212	25 001 530	R110	02 031 910																				
C226	03 002 190	L212	21 008 972	R252	02 032 010	V213	25 001 760	R111	02 032 460																				
C227	03 015 810	L213	21 009 091	R253	02 032 140	V214	25 000 110	T101	20 007 770																				
C228	03 104 720	L214	21 009 101	R254	02 031 890	V215	25 000 050	V101 (8BK7)	25 007 341																				
C229	03 001 450	L215	21 010 331	R255	02 032 120	V216	25 000 020	V101 (8BQ7)	25 007 000																				
C230	03 018 370	L216	21 007 281	R256	02 031 850	V217	25 000 090	V102	25 000 190																				
C231	03 115 350	L217	21 010 121	R257	02 031 920	V218	25 000 050	TUNER STRIPS ANTENNA																					
C232	03 018 470	L218	21 010 331	R258	02 031 860	V530 (17")	25 007 300																						
C233	03 017 850	L219	21 008 972	R259	02 031 960	V530 (21")	25 006 870																						
C234	03 117 310	P226	50 088 302	R280	02 032 130	Z202	20 006 851																						
C235	03 122 290	P229	09 018 810	R281	02 032 540	Z203	20 006 861																						
C236	03 122 290	P233	09 018 810	R282	02 032 520	Z204	20 006 871																						
C238	03 018 470	R201	02 032 400	R283	02 032 420	Z205	20 006 141																						
C239	03 115 040	R202	02 032 520	R284	02 031 650	Z206	20 006 901																						
C240	03 013 080	R203	02 032 480	R285	02 032 420	Z207	20 006 851																						
C241	03 015 610	R204	02 031 610	R286	02 032 040	Z208	21 010 671																						
C242	03 029 480	R205	02 031 610	R287	02 032 180	TUNER 21 009 121																							
C243	03 014 390	R206	02 031 570	R288	02 032 090																								
C244	03 014 390	R207	02 031 910	R289	02 032 030																								
C245	03 016 750	R208	02 032 420	R270	02 032 520																								
C246	03 014 390	R209	02 031 900	R271	02 032 090																								
C247	03 115 670	R210	02 031 920	R272	02 032 110																								
C248	03 014 900	R211	02 031 660	R273	02 032 150																								
C249	03 101 230	R212	02 031 900	R274	02 032 800																								
C250	03 101 550	R213	02 031 910	R275	02 032 040																								
C251	03 015 370	R214	02 032 420	R276	01 044 411																								
C252	03 015 760	R215	02 031 690	R277	01 044 700																								
C253	03 014 520	R216	02 031 900	R278	02 031 920																								
C255	03 104 040	R217	02 032 440	R279	02 034 910																								
C256	03 014 580	R218	02 030 600	R280	02 031 700																								
C257	03 014 520	R219	02 037 920	R281	02 031 870																								
C258	03 014 580	R220	02 031 880	R282	02 031 870																								
C259	03 018 620	R221	02 107 970	R283	02 031 930																								
C280	03 117 340	R222	02 032 050	R284	02 031 870																								
C281	03 115 330	R223	02 032 090	R285	01 038 800																								
C282	03 015 610	R224	02 031 890	R286	02 032 610																								
C283	03 029 480	R225	02 032 580	R287	02 032 580																								
C101	42 006 050	C102	03 119 100	C103	03 119 150	C104	03 119 170	C105	03 119 180	C106	03 119 160	C107, L103	21 010 410	C108, L104	21 010 420	C109	03 119 160	C110	03 119 170	C111	03 100 490	C112	03 119 150	C113	03 119 180	C114	03 119 210	C115	03 119 220
MIXER																Ch. 2	40 011 161												
																Ch. 3	40 011 162												
																Ch. 4	40 011 163												
																Ch. 5	40 011 164												
																Ch. 6	40 011 165												
																Ch. 7	40 011 166												
																Ch. 8	40 011 167												
																Ch. 9	40 011 168												
																Ch. 10	40 011 169												
																Ch. 11	40 011 171												
Ch. 12	40 011 172																												
Ch. 13	40 011 173																												

CABINET PARTS

Part No.	Description	Part No.	Description
18 003 321	Speaker Assy 10"	35 017 054	Strap CRT Support 15½" (RA162)
18 003 331	Speaker Assy 8"	35 017 281	Bracket Magnet (RA 162, 162B)
28 001 381	U Shunt Ion Trap	35 017 271	Arm Pin Cush Cor Mag (RA 162, 162B)
28 001 391	L Shunt Ion Trap	35 017 531	Support 21" CRT (RA162)
29 000 651	Magnet Centering	35 019 591	Strap CRT Support 16" (RA162B)
29 000 661	Magnet Ion Trap Assy	35 021 621	Support 21" CRT (RA162B)
30 014 011	Cup Back Panel	36 003 041	Clip CRT Strap (RA160)
30 027 961	Spring Defl Coll	36 003 071	Clip CRT Strap (RA162, 162B)
30 027 971	Retainer Defl Coll	36 003 081	Clip Mask
31 017 701	Cover Control	36 003 301	Clip Chassis Mtg
31 018 931	Cover Control (RA162B only)	36 003 302	Clip Chassis Mtg
32 002 431	Panel Back (RA162)	38 008 211	Cushion 17" CRT
32 002 471	Back Panel (RA160)	38 008 212	Cushion 21" CRT
32 002 593	Panel Back (RA162B except Dynasty)	45 001 901	Knob Brightness, Tone Mah
32 002 596	Panel Back (RA162B Dynasty only)	45 001 902	Knob Brightness, Tone Bl
35 009 682	Plate Interlock	45 001 971	Knob Contrast, Volume Mah
35 015 901	Support 17" CRT (RA160)	45 001 972	Knob Contrast, Volume Bl
35 015 921	Strap CRT (RA160)	45 003 651	Knob Vernier Tuning
35 015 922	Strap CRT (RA162)	45 003 661	Dial TV Channel Mah
35 015 923	Strap CRT (RA162B)	45 003 682	Dial TV Channel Bl
35 016 301	Bracket Antenna Term	45 003 671	Knob Horiz Hold, Mahogany
35 017 051	Strap CRT Support 10" (RA160)	45 003 732	Knob Horiz Hold, Blonde
35 017 052	Strap CRT Support 9½" (RA160)	45 003 741	Safety Glass (RA162, 162B)
35 017 053	Strap CRT Support 15" (RA162, 162B)	50 065 390	Cable Assy Power
		62 000 603	Washer Felt
		64 006 603	Mask Assy (RA160)
		64 006 604	Mask Assy (RA162, 162B)
		64 002 210	Fastener Snap
		64 008 541	Support Rear CRT
		70 000 800	Gasket Rubber
MECHANICAL PARTS			
		11 000 600	Holder Fuse
		12 005 401	Lamp Holder Assembly
		34 001 220	Socket Tube 7 Prong
		34 001 670	Socket Tube 9 Prong
		34 002 380	

RESISTANCE MEASUREMENTS
All Readings to Ground

Table with 9 columns (1-9) and 20 rows of resistance measurements for various components like V201, V202, V203, etc.

The above resistance readings were taken with an RCA Model WV97A VTVM. All readings are in ohms, K = 1000, M = million. When the reading is affected by a control two readings are given. These readings indicate the variation produced by the control.

ION TRAP MAGNET ADJUSTMENT.—A small magnetic shunt is clipped on the ion-trap magnet at the factory. This shunt should NOT be removed. The ion-trap should be adjusted as follows:

- 1. Place the magnet on the neck of the CRT as shown in figure 1.
NOTE: When the magnet is properly positioned the spring is below the tube neck and the part number stamped on the magnet is on the left, viewed from the rear.

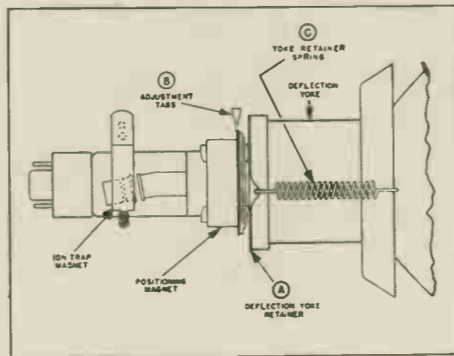


Figure 1

- 2. Turn the set on and allow 30 seconds for warm-up.

Set the contrast control at the middle of its range and set the brightness so that a raster is just visible on the screen.

NOTE: Do not operate the Teletest with the ion-trap magnet improperly positioned, except when making the above adjustment.

- 3. Slide the magnet slowly back and forth along the neck of the tube; at the same time rotating it slightly clockwise and counter-clockwise around the tube. As the raster on the screen becomes brighter, turn down the brightness control until there is just enough brightness to permit the adjustment to be made. Locate the magnet position that gives maximum brightness and optimum focus. Now turn up the brightness control until the raster begins to increase in size. Then adjust the ion-trap magnet again until maximum brightness and optimum focus are obtained.

Optimum focus can be determined by observing the horizontal scanning lines. The scanning lines should be as thin and sharp as possible.

TUNER OSCILLATOR ADJUSTMENT.—Tune the Teletest to the channel on which the oscillator is to be adjusted. Remove the fine-tuning knob and dial. The oscillator slug is accessible through a hole approximately 3/4 inch to the right of tuning shaft. Set the fine tuning control at the center of its mechanical range. Using an insulated alignment tool, adjust the slug so that proper sound and picture are obtained.

FRINGE BLOCK SWITCH ADJUSTMENT.—A Fringe Block switch is provided to improve reception in noisy fringe areas. The switch should be placed in the Fringe position for the reception of weak signals, where high level noise conditions affect the sync noise immunity.

ADJUSTMENTS

The Normal position of the switch is used for all other reception conditions.

Note: This Teletest will not operate properly on strong signals unless the switch is in the Normal position.

ADJUSTING THE A-F-C CIRCUITS.—

- 1. Turn the set on and allow it to warm up for 15 minutes.
2. Set the front panel Horizontal-Hold control at the center of its mechanical range.
3. Short the a-f-c test point to ground with a short length of wire.
4. Adjust the Horizontal-Stabilizer control, L213 (on rear of chassis) until the picture holds sync momentarily.
NOTE: With the a-f-c test point shorted the a-f-c circuits are not functioning and the picture will not continue to hold sync.
5. Remove the short from the a-f-c test point.

HORIZONTAL-DRIVE CONTROL ADJUSTMENT.

The presence of a bright vertical line near the center of the picture indicates the need for readjustment of the horizontal drive control. To adjust the control, rotate it until the bright line disappears. The proper setting is just beyond the point at which the line is no longer visible.

If the range of the control is not great enough to eliminate the bright line, remove the jumper across R277 and readjust the control.

A-G-C ADJUSTMENT.—The a-g-c control is properly adjusted at the factory and normally does not require readjustment in the field. However, in some cases better results can be obtained by adjusting the control to suit the conditions at a particular location. If any of the following conditions are encountered, the

a-g-c control should be readjusted.

- 1. Insufficient contrast.
2. Poor horizontal or vertical noise immunity.
3. Sync huzz.
4. Overloading; as indicated by picture distortion or loss of vertical hold, due to sync compression.
To remedy these conditions, tune the receiver to the channel affected and rotate the a-g-c control until the difficulty is eliminated.

In areas where strong or a combination of strong and weak signals are received, set the Fringe Block switch in the Normal position and readjust the a-g-c control to prevent overloading on the strongest station.

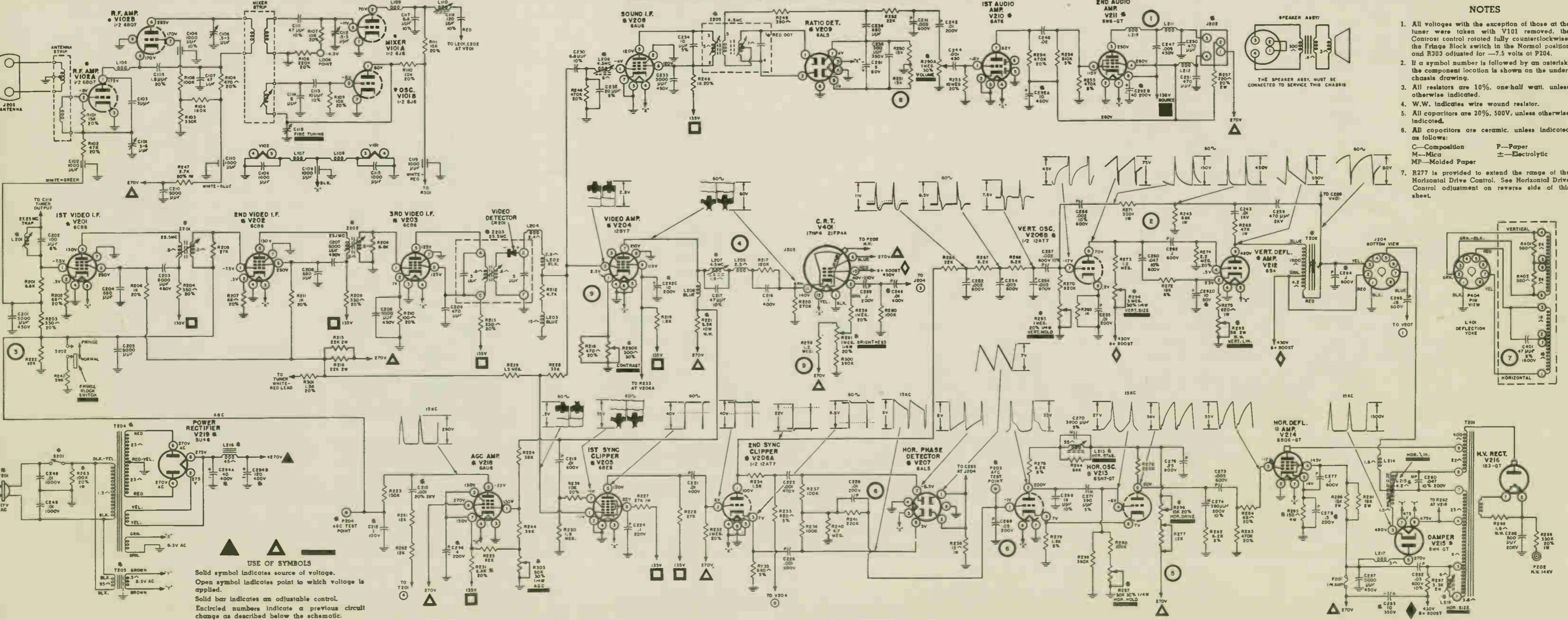
When adjusting the a-g-c to prevent overload by a strong signal the following procedure should be used:

- 1. Set the front panel horizontal-hold control for minimum whip (straight vertical wedge on test pattern) at the top of the picture.
2. Adjust the a-g-c control until the overload is eliminated.
3. Switch the Station Selector on and off the channel in question. Under some conditions this will cause the overload to reappear.
4. If this occurs, reset the a-g-c control and again rotate the Station Selector until the overload does not reappear when switching on and off the channel.

An a-g-c test point is provided on the top of the chassis to aid in checking the performance of the receiver. When the receiver is tuned to a moderately strong signal the a-g-c control can be adjusted to produce approximately 6.5 volts maximum at the test point.

In areas where only weak signals are received, the a-g-c control should be adjusted for optimum reception with the Fringe Block switch in the Fringe position.

RA-164 RA-165 CHASSIS

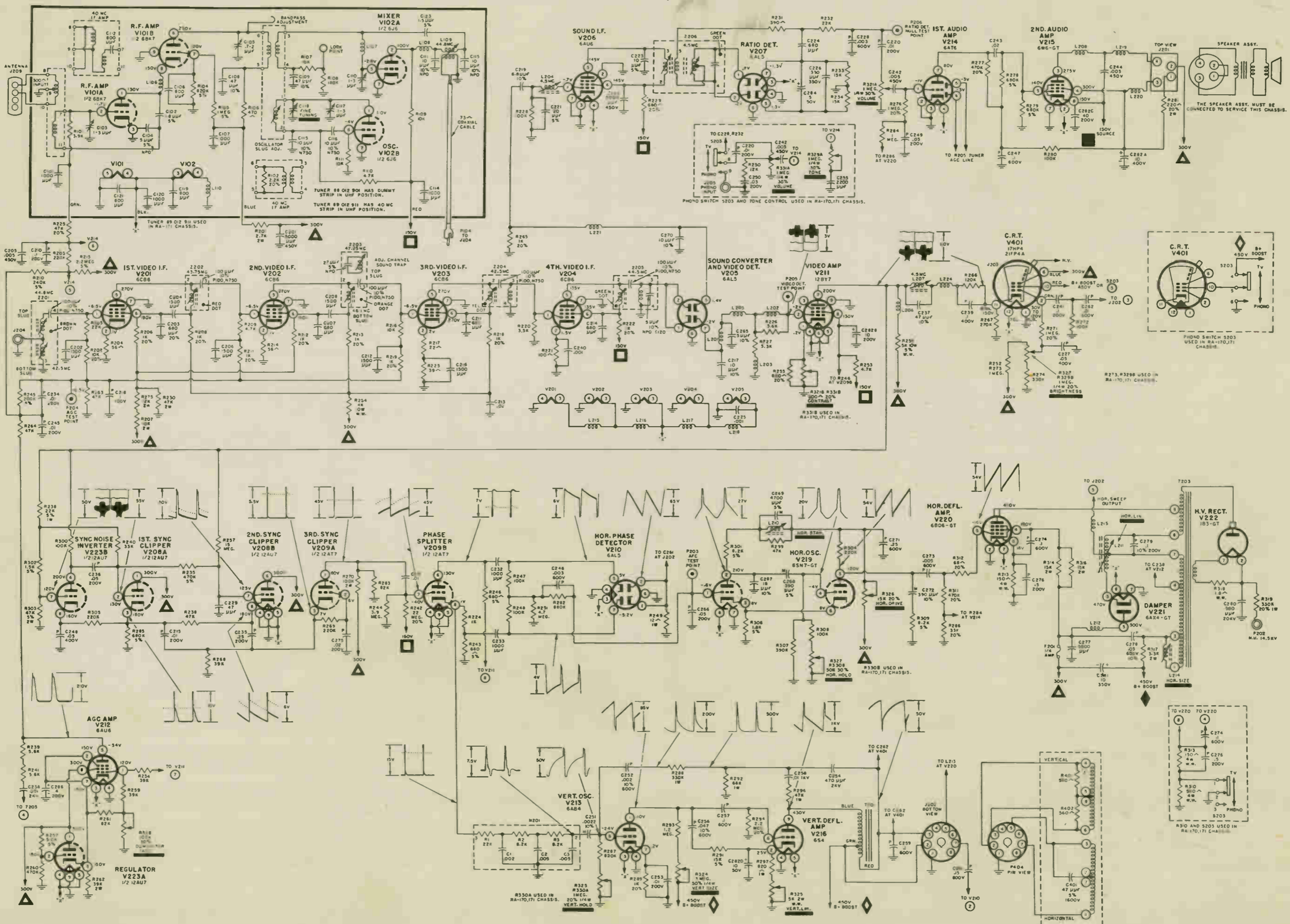


NOTES

- 1. All voltages with the exception of those at the tuner were taken with V101 removed. The Contrast control rotated fully counterclockwise, the Fringe Block switch in the Normal position and R303 adjusted for -7.5 volts at P204.
2. If a symbol number is followed by an asterisk, the component location is shown on the under-chassis drawing.
3. All resistors are 10%, one-half watt, unless otherwise indicated.
4. W.W. indicates wire wound resistor.
5. All capacitors are 20%, 500V, unless otherwise indicated.
6. All capacitors are ceramic, unless indicated as follows:
C—Composition P—Paper
M—Mica ±—Electrolytic
MP—Molded Paper
7. R277 is provided to extend the range of the Horizontal Drive Control. See Horizontal Drive Control adjustment on reverse side of this sheet.

USE OF SYMBOLS
Solid symbol indicates source of voltage.
Open symbol indicates point to which voltage is applied.
Solid bar indicates an adjustable control.
Encircled numbers indicate a previous circuit change as described below the schematic.

RA-166/167, 170/171 CHASSIS



THE SPEAKER ASSY. MUST BE CONNECTED TO SERVICE THIS CHASSIS.

PHONO SWITCH S203 AND TONE CONTROL USED IN RA-170,171 CHASSIS.

PHONO SWITCH S203 USED IN RA-170,171 CHASSIS.

R273, R329B USED IN RA-170,171 CHASSIS.

R338B USED IN RA-170,171 CHASSIS.

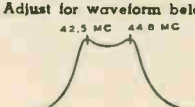
R330B USED IN RA-170,171 CHASSIS.

R330A USED IN RA-170,171 CHASSIS.

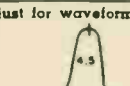
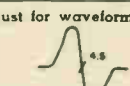
R310 AND S203 USED IN RA-170,171 CHASSIS.

VIDEO IF ALIGNMENT RA-166/167, 170/171

Place STATION SELECTOR between channels to disable oscillator. Remove fuse, F201. Connect a short length of wire to pin 5 of V101 (see Figure 1). Use the lowest VTVM range for all steps.

Step	Signal Generator		Output Indicator	Connect to	Adjust	Remarks
	Frequency	Connect to				
1	44.5 mc No Sweep	Pin 5 V101 ①	VTVM	Pin 2. V211 1VTVM	Z205 for maximum reading	Set signal generator output to maintain reading on lowest range of VTVM.
2	42.5 mc No Sweep	As Above ②	VTVM	As Above 2VTVM	Z204 for maximum reading	Same
3	46.1 mc No Sweep	As Above ③	VTVM	As Above 3VTVM	Z203 (bottom) for maximum reading	Same
4	43.75 mc No Sweep	As Above ④	VTVM	As Above 4VTVM	Z202 for maximum reading	Same
5	47.25 mc	As Above ⑤	VTVM	As Above 5VTVM	Z203 (top) for minimum reading	Increase signal generator output to obtain reading on VTVM.
6	43.5 mc center freq. 10 mc deviation (min.)	As Above ⑥	Oscilloscope through XTAL	Pin 5 V201 6XTAL	Mixer Plate Coil (L109) and Z201 (top) for 44.8 mc marker on one peak Z201 (bottom) for 42.5 mc marker on other peak.	Adjust for waveform below. 
7	4.5 mc 400 CPS AM	Pin 2 V211 ⑦	Oscilloscope through XTAL	Junction R266, R267, and C239 7XTAL	L207 for minimum reading	

SOUND IF ALIGNMENT

Step	Signal Source	Output Indicator	Connect to	Adjust	Remarks
8	4.5 mc Approx. 1 MC sweep	Pin 5 V205B ⑧	Oscilloscope through XTAL 8XTAL	L204 and Z206 (bottom)	Adjust for waveform below. 
9	As Above	As Above ⑨	Oscilloscope Direct 9DIR	Junction R232, C228 Z206 top	Adjust for waveform below. 

ALTERNATE SOUND IF ALIGNMENT — USING TV SIGNAL

Step	Signal Source	Output Indicator	Connect to	Adjust	Remarks
8	TV Signal	VTVM	Pin 7. V207 8XTAL	L204 Z206 (bot.) for maximum reading	Teleset must be tuned for best picture.
9	As Above	VTVM	Ratio Del. Test Point P206	Z206 Top for zero reading	As Above

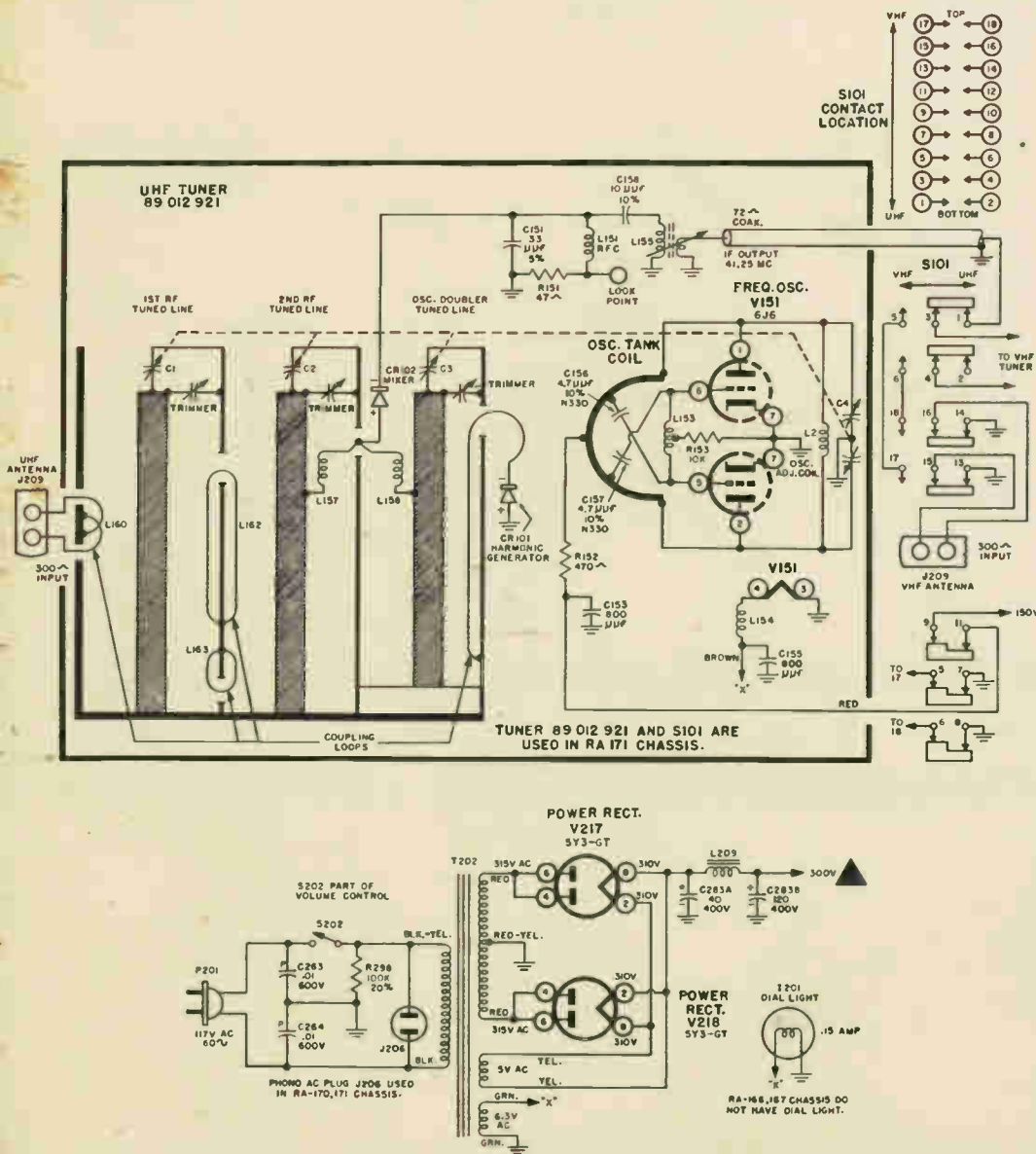
PHASING

- When the alignment procedure has been completed, the phasing of the video IF strip should be checked and corrected if required.
- Tune the receiver to the best signal available, preferably a station transmitting a test pattern.
 - Adjust the Fine Tuning control until the sound in the picture is eliminated.
 - Carefully examine the picture for trailing whites, or the presence of spurious black response (smear) following black elements of the picture.
 - If either of these conditions is encountered, adjust the top slug of Z201 not more than 1/2 turn to eliminate the condition.

RESISTANCE MEASUREMENTS All Readings to Ground

	1	2	3	4	5	6	7	8	9
V201 6CB6	80K	56	.1	0	30K	30K	0		
V202 6CB6	50K	56	.1	0	30K	30K	0		
V203 6CB6	50K	61	.1	0	30K	30K	0		
V204 6CB6	.3	100	.1	0	25M	25M	0		
V205 6AL5	.3	.3	.1	0	1K	0	3.3K		
V206 6AU6	100K	0	0	.1	25M	25M	0		
V207 6AL5	INF	INF	.1	0	15K	0	15K		
V208 12AU7	25K	60K	680K	.1	.1	25K	520K	720K	0
V209 12AU7	50K	220K	3.9K	.1	.1	25M	3.9M	1.6K	
V210 6AL5	12	12	.1	0	4.9M	0	4.9M		
V211 12BY7	0.350	3.9K	0	0	0	.1	25K	25M	0
V212 6AU6	30K 40K	27K 30K	.1	0	280K	25K	27K 30K		
V213 6AB4	INF	.1	0		820K 1.8M	1K			
V214 6AT6	2M	.1	.1	0	400K	600K	500K		
V215 6W6GT		25K	25K	270K	0	25M			
V216 6S4		820-5.8K	0	.1	2.2M		INF		
V217 5Y3GT		25K		18	18	25K			
V218 5Y3GT		25K		18	18	25K			
V219 6SN7GT	5.3M	30K 50K	1.8K	80K 110K	250K 265K	1.8K	0	.1	
V220 6BQ6GT		0	500K	32K	500K		.1	150	Cap INF
V221 6AX4GT		INF	INF	25K			0	.1	
V222 180GT		INF	INF	INF	INF	INF		Cap INF	
V223 12AU7	25K	300K	30K	.1	.1	150K	30K	1M	0
V401 CRT	0	1M 1.5M			25K				

The above resistance readings were taken with an RCA Model WV97A VTVM. All readings are in ohms, K = 1000, M = million. When the reading is affected by a control two readings are given. These readings indicate the variation produced by the control.



PARTS LIST

Symbol	Part No.	Symbol	Part No.	Symbol	Part No.	Symbol	Part No.	Symbol	Part No.	Symbol	Part No.
C201	03 015 610	C268	03 021 510	R205	02 032 050	R268	02 031 840	S202	01 053 131	L106	21 011 811
C202	03 017 850	C269	03 030 140	R206	02 032 420	R269	02 032 050	S203	05 005 120	L107	21 011 571
C203	03 121 520	C270	03 115 000	R207	02 037 890	R270	02 038 010	T201	20 008 021	L108	21 011 581
C204	03 017 850	C271	03 120 120	R208	02 032 420	R271	02 032 600	T202	20 008 182	L109	21 011 801
C205	03 015 610	C272	03 021 950	R209	02 031 850	R272	02 032 010	T203	20 008 061	L110	21 011 561
C206	03 017 850	C273	03 120 790	R210	02 031 050	R273	02 032 130	V201	25 002 670	P104	09 018 810
C207	03 121 520	C274	03 120 740	R211	02 032 420	R274	02 032 070	V202	25 002 670	R101	02 031 840
C208	03 017 850	C275	03 119 770	R212	02 032 420	R275	02 037 900	V203	25 002 670	R102	02 041 180
C209	03 119 740	C276	03 119 710	R213	02 032 420	R276	02 032 600	V204	25 002 670	R103	02 031 890
C210	03 121 520	C277	03 015 610	R214	02 031 620	R277	02 032 580	V205	25 000 020	R104	02 041 730
C212	03 017 850	C278	03 121 200	R215	02 031 280	R278	02 031 130	V206	25 000 050	R105	02 031 890
C213	03 122 430	C279	03 104 690	R216	02 031 890	R279	02 031 160	V207	25 000 020	R106	02 041 730
C214	03 121 520	C280	03 121 501	R217	02 031 570	R280	02 032 010	V208	25 000 130	R107	02 031 890
C215	03 014 900	C281	03 250 411	R218	02 032 420	R281	02 038 380	V209	25 000 530	R108	02 032 040
C216	03 017 850	C282	03 124 180	R219	02 032 420	R282	02 032 110	V210	25 000 020	R109	02 031 890
C217	03 115 000	C283	03 121 080	R220	02 031 830	R283	02 032 000	V211	25 000 050	R110	02 031 850
C218	03 122 800	C284	03 120 960	R221	02 031 650	R284	02 032 130	V212	25 000 380	R111	02 031 890
C219	03 120 900	C285	03 122 480	R222	02 032 420	R285	02 031 160	V213	25 001 760	R112	02 037 341
C220	03 014 900	C286	03 122 461	R223	02 031 600	R286	02 032 510	V214	25 000 040	V102	25 000 190
C221	03 013 800	F301	11 053 720	R224	02 031 770	R287	02 032 120	V215	25 002 680		
C222	03 015 610	L101	12 001 310	R225	02 032 520	R288	02 035 070	V216	25 003 010		
C223	03 015 270	L102	09 022 690	R226	02 031 860	R289	02 032 420	V217	25 000 220		
C224	03 121 520	L103	03 122 480	R227	02 031 830	R290	02 030 760	V218	25 000 220		
C225	03 100 490	L104	03 122 461	R228	02 032 010	R291	02 030 760	V219	25 000 110		
C226	03 014 390	L105	34 003 462	R229	02 032 420	R292	02 034 990	V220	25 001 830		
C227	03 120 550	L106	09 031 070	R230	02 037 970	R293	02 032 140	V221	25 007 780		
C228	03 120 200	L107	09 031 070	R231	02 031 720	R294	02 034 620	V222	25 000 150		
C229	03 115 330	L108	09 015 560	R232	02 031 720	R295	02 034 760	V223	25 000 130		
C230	03 015 920	L109	40 015 240	R233	02 031 910	R296	02 037 970	V401 (17")	25 007 710		
C231	03 015 920	L110	21 006 624	R234	02 031 910	R297	02 034 760	V401 (21")	25 007 710		
C232	03 015 810	L111	21 006 624	R235	02 031 120	R298	02 035 540	Z201	20 008 231		
C233	03 015 810	L112	21 006 627	R236	02 031 970	R299	02 031 970	Z202	20 008 241		
C234	03 014 900	L113	21 011 021	R237	02 032 270	R300	02 032 010	Z203	20 008 241		
C235	03 119 720	L114	21 011 082	R238	02 032 010	R301	02 030 700	Z204	20 008 251		
C236	03 119 750	L115	21 006 627	R239	02 033 820	R302	02 030 520	Z205	20 008 261		
C237	03 015 760	L116	21 010 961	R240	02 031 860	R303	02 036 880	Z206	20 008 303		
C238	03 122 420	L117	21 006 230	R241	02 031 950	R304	02 032 050	Z207	20 006 141		
C239	03 119 940	L118	21 010 952	R242	02 031 860	R305	02 032 050				
C240	03 100 490	L119	21 010 991	R243	02 032 680	R306	02 030 540				
C241	03 120 340	L120	21 011 001	R244	02 032 200	R307	02 032 080				
C242	03 015 610	L121	21 006 520	R245	02 031 030	R308	02 032 080				
C243	03 122 430	L122	21 006 280	R246	02 030 440	R309	02 030 870				
C244	03 015 610	L123	21 011 062	R247	02 032 010	R310	02 121 630				
C245	03 014 900	L124	21 008 972	R248	02 032 350	R311	02 032 580				
C246	03 115 670	L125	21 008 972	R249	02 032 010	R312	02 032 350				
C247	03 120 140	L126	21 008 972	R250	02 034 540	R313	02 121 620				
C248	03 119 950	L127	21 008 972	R251	02 031 900	R314	02 037 910				
C249	03 119 750	L128	21 006 230	R252	02 032 130	R315	02 037 830				
C250	03 101 230	L129	21 011 082	R253	02 032 210	R316	02 100 710				
C251	03 029 480	L130	21 008 972	R254	02 031 850	R317	02 035 570				
C252	03 100 300	L131	21 011 082	R255	02 031 850	R318	01 053 200				
C253	03 014 990	L132	21 011 062	R256	02 032 410	R319	01 051				

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ALLEN B. DU MONT LABORATORIES, INC.
257 - 16th AVENUE, PATERSON, NEW JERSEY